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To consider and take action upon all general questions relating to the navigation and carrying business of the Great Lakes, maintain necessary shipping offices and in general to protect the common interest of Lake Carriers, and improve the character of the service rendered to the public.

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WILL CONTEST THE SEIZURE.

Count Rehburg, of Middle Bass, O., has retained Attorney Scott, of the Toledo firm of Doyle, Scott & Lewis, and will proceed to give the Canadian government a fight over the seizure of his steam yacht, the Leroy Brooks. He will give the required bond of $4,500 to the Canadian collector of customs at Amherstburg and contest the case to the end. He says that the charge is not fishing in Canadian waters, but fishing for bass in the close season prescribed by a local Canadian law. He claims that he was not fishing, and that no one was fishing from the yacht. The fishermen were using small boats, and while fishing were a considerable distance from the Brooks. He says the Brooks was simply chartered to carry a certain number of passengers, and as such entered and cleared at the Canadian port as required by law.

RUSSIAN-AMERICAN PACIFIC LINE.

In connection with current reports outlining the plans of the Russian and American capitalists to establish a line of steamships to be operated on the Pacific as a link to the great Russian trans-continental railway soon to be completed to the seaport of Vladivostock, in the North Pacific, Gen. Thomas S. Sedgwick, harbor engineer, states that since August last he has been furnishing the interested parties with particulars concerning the harbor, San Diego, Cal. The principal owner of the Amoor Navigation Co., who is also largely interested in the Siberian Trans-continental railroad, at present handles the greater portion of the oil output of that country, as well as other commerce at Siberian ports; and, owing to the commercial arrangement entered into between the operators of American and Russian oil fields, a determination has been expressed to establish the line of the Amoor Navigation Co. in the Trans-Pacific trade, with San Diego as the American port of destination.

STATEMENT OF COMMERCE EAST AND WEST BOUND THROUGH ST. MARY'S FALLS CANAL.

EAST BOUND.

ITEM.	Designation.	May, 1894
Copper	Net tons..	16,418
Corn	Bushels...	531,268
Building stone	Net tons..	2,563
Flour	Barrels ...	1,126,175
Iron ore	Net tons..	888,466
Iron, pig	Net tons..	4.045
Lumber	M. ft. B.M.	87,687
Silver ore	Net tons..	372
Wheat	Bushels...	3,880,024
Unclassified freight	Net tons..	15,468
Passengers	Number...	818

WEST BOUND.

ITEM.	Designation.	May, 1894
Coal, anthracite	Net tons..	52,133
Coal, bituminous	Net tons..	16,372
Flour	Barrels...	717
Grain	Bushels...	500
Manufactured iron	Net tons..	3,597
Salt	Barrels ...	18,718
Unclassified freight	Net tons..	35,878
Passengers	Number...	726

East bound freight, net tons	1,309,565
West bound freight, net tons	110,976
Total freight, net tons	1,420,541

PROPRIETARY RIGHTS IN SUBMERGED LANDS.

Circuit Court Commissioner Straker, of Detroit, has decided in the case brought to recover possession of land at Grosse Pointe covered by the water of Lake St. Clair, that a land owner has the right and title to land covered by water to the extent of one mile from shore, and that the law which gave the right to fish in Lake St. Clair did not destroy the proprietary interest in the land, but merely regulated the period when fishing can be carried on.

The defendant claimed that by the Michigan law the waters of the lake were open for fishing to all citizens, and that the land owner had no right in that portion along the front of his land covered by water, and, further, that he could not contract to rent it. The commissioner found for the plaintiff.

NAVAL EQUIPMENT.

The biggest armorclads in the world are the Italian Italia and Lepanto, sister ships, each of 15,900 tons displacement. Next to them come the monster English battleships of the Royal Sovereign class, vessels of 14,150 tons displacement. These in turn will be surpassed by the Magnificent and Majestic, each of which will displace 14,900 tons. The largest armorclad over which the French flag floats is the Admiral Baudin, of 11,900 tons, and the next to her is the Lazare Carnot, only eighty tons smaller. Germany's largest armorclad is the Brandenburg, of 9,840 tons. Austria has never built any armorclads save those of moderate dimensions, her largest, the Tegetthoff, being of 7,360 tons. Spain's largest is the Pelayo, of 9,900 tons. The three United States battleships of the first-class which have been launched are the Massachusetts, Oregon and Indiana, each of 10,200 tons displacement. The Iowa, now building, will be 11,296 tons. There is now a reaction against monster ships. England is the only naval power that persists in the policy of building them, and apparently she is nearing a halt. The Italians have come to the conclusion that is indicated by the dimensions of their latest armorclad authorized, which will have 9,800 tons displacement. The determination of France and the United States to keep their battleships under 12,000 tons was deliberately taken by each government, after weighing weight against efficiency. In this policy Russia also agrees, the largest of her armorclads in service being the Georgi Pobiedonosetz, of 10,280 tons, while her naval constructors regard 12,000 tons as about the proper limit.

Of the cruisers now afloat the Russian Rurik is the largest, and probably, taking all things into consideration, the most powerful. She is armor belted and is of 10,900 tons displacement, almost 2,000 tons larger than the Blake. The English have authorized two cruisers of 14,000 tons each, being determined to see the Rurik and go her 3,100 tons better. As in the case of armorclads, England stands alone in accepting this challenge. Her Blake and Blenheim are not only exceeded by the Rurik but by the Spanish Emperador Carlos V, which has 9,235 tons displacement. The largest French cruiser in active service is the D'Entrecastiaux, of 7,900 tons, but the Jeanne d'Arc is being enlarged to a total displacement of 8,700 tons. The largest cruiser class of the Italian service either afloat or authorized displace 6,500 tons each, which is 450 tons more than Germany's leader, the Kaiserin Augusta. The largest of our cruisers afloat is the New York, of 8,150 tons, while the Brooklyn, building, will be 1,000 tons larger.

OBSTRUCTING CHICAGO RIVER.

With two elevated railroads petitioning for bridges across Chicago river between Wells and Clark streets and the marine interest unalterably opposed to all further obstructions in the navigable waterway, Capt. Marshall, Corps of Engineers, U. S. Army, who is the district officer in charge, will have a lively time among the contestants. Capt. J. S. Dunham, who returned from Washington last week, feels that the Lake Carriers' delegation won a great victory in getting Secretary Lamont to refer the plans back to Capt. Marshall. He is confident that no bridge with a center pier will be allowed unless LaSalle street tunnel is lowered.

NEW TONNAGE.

The lake built vessels assigned official numbers by the Bureau of Navigation for the week ending May 26th are as follows: Sail—Biwabick, 1,402 tons, hailing from Port Huron and built at Marine City, Mich.; Allie T., 8 tons, Chicago. Steam—Puritan, 11 tons, Buffalo; Sophia, 16 tons, Cape Vincent, N. Y.

NEWS AROUND THE LAKES.

CHICAGO, ILL.

Special Correspondence to The Marine Record.

J. J. Keith returned on Saturday from an extended tour in South America.

Capt. John Prindiville chartered the steamer Interocean for 75,000 bushels of oats to Buffalo at 1⅜ cents.

J. J. Keith & Co., chartered the steamer Mary A. McGregor for corn and oats, South Chicago to Buffalo at 1¼ cents.

The Independent Tug Line are placing a new steam steerer manufactured by the Sheriffs Manufacturing Co., on their fine tug William Dickinson.

Charles T. Hills, of Muskegon, has sold his interest in the steamer Mabel Bradshaw to Hugh Bradshaw, of Chicago. It is reported that the steamer will be fitted out to run in opposition to the Holland and Chicago Transportation Line.

The engineers, firemen and deck hands of the several Tug Companies at this port struck on Saturday for a raise to their former wages which were cut 10 per cent. on May 1st. The strike did not last long, as the Tug Companies acceded to the men's demands during the day.

Most of the coal for fueling purposes at the coal docks on Chicago river has been consumed, and steamers are dependant upon the supply of fuel that arrives daily by rail. The tugs have a supply for present use. O. S. Richardson has enough to supply all demands for the next two weeks.

The Secretary of War has granted the Northwestern Elevated Co. a license to build an elevated bridge across Chicago river near Wells street bridge. The bridge is to have no middle pier. It is not to be a lift bridge like that at South Halsted street; it is to open in the middle and the two parts are to be elevated and fold up against the respective piers on each side of the river.

The V. O. T. Co.'s tug Black Ball, which has been fitted up with tanks and appliances to contain and use crude petroleum oil as fuel, has made two trial trips, the oil proving far more satisfactory than coal, as it made steam just as quick, does away with the smoke nuisance and dispenses with the services of a fireman. The tug has not yet done any towing, but will do so this week.

At Miller Bros.' shipyard the steamer Puritan was in dock for new holding-down bolts; the sloop yacht Hattie Bradwell for stopping leak and calking; schooner yacht Toxteth for calking bottom; tug Waubun for stopping leak and repairs to stern bearing; schooner Winnie Wing to have leak stopped; steamer Annie Laurie for new holding down bolt; steamer Maggie Duncan for some calking; schooner yacht Hawthorne to have leaks stopped.

Capt. John Prindiville purchased for the Shores Lumber Co., of Ashland, Wis, the new steamer Adelle Shores from the Wolverine Barge Co.; consideration $50,000 cash, and the steamer G. W. Johnson. The steamer was built by R. W. Linn at Gibraltar and launched May 29th. Her dimensions are 207 feet over all, 37 feet beam, 12 feet hold, engine fore and aft compound 20 and 40 by 36. Marine boiler 10½ by 16, built by S. F. Hodge, Detroit. Her carrying capacity is estimated at one million feet of lumber.

P. H. Fleming & Co. chartered the steamer Majestic for 125,000 bushels of oats to Buffalo at 1¼ cents; the barge Porter for 50,000 bushels of corn to Buffalo at 1¼ cents; the steamer Parks Foster for 95,000 bushels of corn to Buffalo at 1⅜ cents. Palmer, Cook & Calbick chartered the steamer W. P. Ketchum for wheat to Kingston at 2½ cents; her consort, the George Bowen, for oats to Buffalo at 1⅜ cents; steamer Toltec and consort Miztec for corn to Buffalo at 1⅜ cents. J. J. Rardon & Co. chartered the steamer City of London for corn to Buffalo at 1⅜ cents.

Robert Wenkler, aged 39 years, chief engineer on the steamer Robert Holland, died suddenly in the steamer's engine room whilst on watch at 9 o'clock last Thursday night on Lake Superior. His remains were taken to Manistee, where he resided, in charge of the second mate of the Holland. He leeves a widow and one daughter to mourn the loss of a good kind husband and father. He was greatly respected by a large circle of friends and was widely known as a thoroughly reliable and capable engineer as well as a generous hearted man. His funeral took place at Manistee Monday afternoon.

Capt. James Godman, of the schooner American Union, recently lost at Thompson's Harbor, Lake Huron, wishes to publicly return thanks to Capt. McKenzie and the members of the Middle Island life-saving station. He says they came to his assistance on the 7th of May and stayed until May 19th and worked night and day assisting in handling the wrecking apparatus. On the night of May 18th they lay off the schooner on their oars all night in the fiercest part of the storm, watching for the safety of himself and his crew, and eventually took them off on the morning of the 19th of May, shortly before the schooner went to pieces. Too much praise cannot be given to Capt. McKenzie and his brave crew of life-savers.

Steward H. Moore, the well known and much respected steamboat boiler inspector for Chicago district, who has been remored by Secretary Carlisle, has written a letter to the Secretary of the Treasury requesting that he be given a hearing as to any charges which may have been brought against him. A number of prominent vessel men have also sent letters to the Secretary asking that Mr. Moore be given an opportunity to clear himself of the charges made. "I do not know why I have been removed," Mr. Moore said. "I am not conscious of having neglected my duty as charged, nor have I written any letters to Secretary Carlisle. I have served for many years and think that I enjoy the confidence of the marine interests." Mr. Moore was appointed under President Arthur's administration and he has served and given general satisfaction ever since, the first Cleveland administration not disturbing him. His associate for many years, Capt. Cyrus Sinclair, was a Democrat and he was not disturbed when the Republicans came into office.

DETROIT, MICH.

Special Correspondence to The Marine Record.

Gen. O. M. Poe has received monthly reports from the contractors at work on the 21-foot channel, showing the amount of dredging done during the month as follows: In section No. 5, foot of Lake Huron, 42,095 cubic yards; section No. 6, St. Clair Flats, 70,429 cubic yards. The reports from the other sections have not not yet arrived.

A fair idea of the high class of work entering into the construction of the machinery for modern lake steamers may be had from an inspection of a handsome triple expansion engine now standing completed on the erecting floor at the Frontier Iron Works. The engine has cylinders 16 inch, 25 inch and 42 inch diameter, with a stroke of 34 inches. It will be open to inspection this afternoon and to-morrow. Near by stands the quadruple engine for the now famous McElroy "flyer" Unique, approaching completion. Both are of new design and contain all the latest improvements, many of them original.

Work at the yards of the Detroit Boat Works is going briskly along. Among recent and present orders for life boats, rafts and yawls are sixteen large wooden, diagonal built life boats for the Northern Steamship Co.; also twelve 40-person rafts for same, and four metallic life boats and three rafts for F. W. Wheeler & Co., of Bay City; yawls for the schooner now building at Gibraltar, Mich.; about half a dozen yawls to the order of Capt. J. W. Westcott; two 20-foot yawls for schooner Redwing; two yawls for steamer Blanchard; one yawl for Gilchrist & Fletcher; two yawls for R. P. Prince, Ashland, Wis., and about 28 life rafts of different sizes for customers at various points on the lakes.

The steamer Wolverine State, which had a mishap while being launched at Gibraltar Tuesday last, reached Detroit in tow and it was found that the damage consisted of a broken shoe and stern post, and a split in the keel, letting in water so that two hand pumps had to be kept going constantly. The barge was built at Linn's shipyard in Gibraltar, by the Wolverine Steam Barge Co., of which J. J. McLean is president, and Frank L. Andrus secretary. The other stockholders are Fred L. Harper, Capt. George W. McCullagh and H. R. Andrews. The new boat is one of the best built wooden vessels ever floated on the Detroit river, with all modern improvements. Her machinery was built by Samuel F. Hodge & Co., the Riverside Iron Works, and is all ready to be placed as soon as the repairs are made. The steam barge company has entered into a contract to deliver her to the Shores Lumber Co., of Ashland, Wis., when completed, the consideration being $68,000, and the steam barge George W. Johnson being taken as part pay. It is probable that her name will be changed to the Adelia Shores by the new owners.

CLEVELAND, O.

The life saving station at this port is to be rebuilt, a new life boat of the English model added to the equipment and hard weather drills will be given the crews as occasion offers.

The new fireboat has been given a trial trip and found satisfactory. Plans for the construction of a new hull to take the place of the condemned fireboat have been completed and bids for the work will shortly be asked for.

A large number of people visited the Northwest on her arrival here Wednesday from Buffalo, and her passenger list went up about seventy more; another quota will be added at Detroit, so that the maiden trip of the big boat will be a paying one.

Work on the large steel steamer now under construction at the yards of the Cleveland Ship Building Co. is advancing as fast as a large body of skilled workmen can be placed to advantage. She will be ready for business at least two months before this season closes.

The Detroit & Cleveland Steam Navigation Co., has been compelled to lay up one of their steamers owing to lack of fuel. The City of Detroit will keep the route open, leaving each port three times a week. The daily service will be commenced again as soon as fuel can be got.

The new steel tug Marguerite will be ready for work on Monday and the Sprankle about a week later. Capt. John F. Brown has charge of the new tug L. P. Smith, and find her an excellent boat. With the addition of these three new steel tugs the Cleveland Tug Co. will have a fleet that their manager, Mr. George Elsey, Jr., may well feel proud of.

The riveters at the yards of the Globe Iron Works Co. are all at work again and the North Land, sister ship to the North West, will be ready for launching about the middle of July. The large steel freight steamer now under construction for builders account is partly plated and will follow closely on the launch of the large passenger boat. The last of the trio of steel tugs built at this yard is about completed and they make a capital addition to the towing fleet of the port.

DULUTH, MINN.

Special Correspondence to The Marine Record.

The first cargo of wheat ever taken from the head of the lakes for export via. Oswego, N. Y., has just been sent down from Duluth on the steamer Ketcham. It is understood that quite a large export trade will be worked on this route. The hustling vessel firm of Earhart & Fitzpatrick has opened this route to tide water.

The Duluth-Ogdensburg Transportation Co. and the Northern Steamship Co. have applied Chicago rates on merchandise from New York and Boston to Duluth. These rates will, of course, control the business to all the northwestern points from the east, as they wipe out the rail haul from Chicago to Duluth or to destination. The tonnage involved is enormous and the most profitable part of the west-bound business of the roads reaching the section. Speaking of the probable result of the new rate, the Chicago *Herald* says that as there is no west-bound freight pool among eastern lines, it may be that secret concessions will be made to divert a part, at least, of this business via. Chicago. At maintained rates, however, Chicago lines will lose every pound of it. The rate was first openly applied by the new Duluth-Ogdensburg line.

Stocks of bituminous coal at the Lake Superior ports at the close of last week were about 375,000 tons, of which 125,000 was at Ashland and the rest at Duluth and Superior. Of this the Northwestern Fuel Co. held about 100,000 tons. How closely sold up this coal was may be inferred from the fact that a company on whose docks were at least 60,000 tons was unable to sell a single cargo to be shipped east. One cargo was actually bought, however, and shipped to Cleveland, it being the first time in the history of upper lake navigation that such a thing has been done. Almost all the local stocks are owned by the railways, and will be hauled away by them as fast as possible. It has been intimated that the roads are not willing that coal should be taken by other customers, and are delaying shipments with a view to having a reserve stock for confiscation if needed later.

Iron ore shipments are large from all the ports on Lake Superior, and for the season to date have been 366,000 tons from Duluth and Two Harbors up to last Saturday, 335,000 from Ashland and about nearly as much from Marquette. Two Harbors and Ashland are each over 100,000 tons in excess of their shipments to this date last year, while Duluth has shipped more than to August last season. The Chandler mine on the Vermilion range has sent out 103,000 tons, leading all the mines of the district. Minnesota Iron Co.'s Canton mine is the leader of the Mesaba.

Were it not for the general opinion here that the coal strike will soon end, the outlook for shipping would be very blue. Every possible economy is being practised by the roads and mines to help out the supply of coal, and the roads are even accused of delaying shipments to regular customers so that they may have a supply at the head of the lakes for themselves. If the strike ends soon there will be a tremendous traffic in coal for the remainder of the season, and the tonnage engaged in the trade will have plenty to do and at better rates than have ordinarily prevailed.

Sales of ore additional to those heretofore reported have been made, chiefly from the Mesaba, by mines both in and out of the Rockefeller combination. A little Vermilion range ore has also been sold and that range is about sold up for its season's output.

The complete overhauling, renovating and the making of changes necessary by last season's experience are nearing completion on the Christopher Columbus. She was pronounced a model boat last season by competent judges and is an incomparably better boat this

year. Chief Engineer Robert S. Blauvelt has had the engines overhauled and refitted and additionally stayed. When started up the other day the wheel turned 112 revolutions per minute for two hours. The Columbus will be commanded this season by Capt. Robert Smith, well known to all lake men. The big whaleback expects to leave for Chicago on June 12. When asked the other day about a race with the North West, as spoken of in THE RECORD last week, Capt. McDougall only said that the Chris. wasn't in the racing business.

The schooner Halloran left Two Harbors May 26 with 1,357 tons Franklin ore for Fairport. Three days later the Marquette *Journal* had the following, "If the schooner Hallaran is not now at the bottom of Lake Superior more than one local prophet will have been proved of little credit. She cleared from here in tow of the Lyon, having taken on a gang of twelve extra men to man her pumps and keep her afloat. When arriving from Two Harbors, she was making about three inches of water in an hour and her crew was completely exhausted with the efforts which had been made to keep her from sinking. The captain tried to get a steam pump here but could not and was compelled to engage men. One of the dock men went in her hold and dug into the cargo with a shovel. At the depth of a foot he found water.

Three Iuman tugs, the Adams, Pathfinder and Fiske, were seized for unpaid fuel bills incurred by Smith & Fee previous to their purchase by Capt. Inman. Bonds were furnished and the tugs were released.

About 17,500,000 feet of lumber was shipped from the head of the lakes last week, going on 23 vessels. The Cranberry Co. loaded 16, Mitchell & McClure 3, Merrill & Ring 2, and West Superior concerns 2. Of this all but four cargoes went to Buffalo and Tonawanda, the rest being for Chicago, Cleveland and Toledo. Nearly all the old cut is moved and sales of new cut have been slight so far.

The expected arrival of the North West this week has stirred Duluth, and to a less extent Superior, not a little. At Duluth the Chamber of Commerce, Board of Trade and Jobbers Union have made arrangements to present the vessel with a fine set of colors, and will give them during an excursion to be had on Friday afternoon. It is expected the boat will arrive about 10 o'clock Friday a. m., and she will be open for inspection for several hours, after which there is to be an excursion to people of Duluth, Superior, St. Paul and Minneapolis, the guests from the latter place arriving on special trains run by the Great Northern road. The freight arrangements of the Great Northern road have been changed considerably since it was decided to land the passenger fleet at Duluth alone, and not to run on to Superior with them. The dock of the Duluth Transfer Co. has been entirely re-arranged, excellent cabins and waiting rooms fitted up and the offices of the general freight agent have been moved to the docks. Much of the transfer business of the line that has heretofore been done at West Superior will hereafter be done at Duluth. The new steamer has already an excellent list of cabin passengers for her first down trip, and people here who have some knowledge of the lake business look to see her well filled all the season.

LAUNCH OF THE KEARSARGE.

The large steel freight steamship Kearsarge, named in honor of the famous old war vessel, was successfully launched from the yards of the Chicago Ship Building Co. at South Chicago on Thursday last. The Kearsarge will be employed in the trade between Duluth and Buffalo and will be ready for service July 1. She is built on what is known as the channel type of construction and will carry two pole spars. She is built with gangways so as to carry package freight as well as bulk cargo. The Kearsarge is owned by the Interlake Steamship Co. Briefly, her dimensions are: Length on keel, 328 feet; beam 45 feet and depth 27 feet. The engines are triple expansion, cylinders 20, 36 and 52 inches in diameter by 40 inches stroke. The two boilers are each 14 feet long and 13 feet in diameter. The wheel is 13 feet in diameter with 16 feet pitch. All the machinery was furnished by the Cleveland Ship Building Co.

There will be but one smokestack. The cabins are finished in oak and will be as fine as any freight boat ever carried. A new system of signaling from the bridge to the engine room will be placed in the Kearsarge. It is operated by electricity and consists of a box containing eight push buttons on the bridge, each one raising a card inscribed with a different order, as "Stop," "Back," "Go ahead," etc. A similar box is placed in the engine room and another card is placed therein. When a later order is given the first card drops out of sight. When the signal is given a bell rings in the engine room to notify the engineer. Another bell on the bridge, showing the captain that the apparatus has done its duty. A printing mechanism is attached, recording every order, with the exact time it was given. Another wire enables the engineer to notify the captain that a mishap has occurred in the engine room. The apparatus was invented by Robert H. Gruschow, of Chicago, and is receiving much approval among marine men.

Among those present at the launch were: A. B. Wolvin, of Duluth; J. L. Greatsinger, manager Duluth & Iron Range railroad; Sinclair Stewart, of New York; H. G. Dalton, H. H. Porter, John H. Wrenn, James Walshe, A. N. Eddy, Capt. Allan McIntyre, D. T. Helm.

LARGE IRON ORE SHIPMENTS.

Iron ore shipments for the last month were the heaviest on record from Duluth and Two Harbors combined and aggregate 336,000 tons from both ports for the season. This is 150,000 tons ahead of the record for the same date last year.

OPENING OF THE HAY-LAKE CHANNEL.

Gen. O. M. Poe, Corps of Engineers U. S. Army, awarded the honor of opening the Hay-lake Channel in St. Mary's River to the new passenger steamer North West. The work will not be turned over to the Government until June 30th. Plans for the lighting of the new channel have been prepared by the lighthouse board, but no appropriation has yet been made. Work on the Hay-lake channel was begun 12 years ago and it will cost about $2,700,000 to complete the route. It shortens the course for vessels in St. Mary's River 11 miles, but the saving is really much larger than indicated by that distance, for the dangerous route around Sugar Island through lake George is avoided.

CANALIZING.

An unusual number of projects for canals connecting the Great Lakes with other waterway systems are under consideration by Congress. The bill for a deep waterway between the Great Lakes and the Atlantic, entirely through American territory, which has been before several Congresses, has been re-introduced and favorably reported by the House Committee on Railways and Canals. The bill was introduced in the present Congress by Representative Chickering, of New York. It provides for surveys and the ascertainment of the cost of several projected routes across New York state. One plan is for the purchase and deepening of the Erie canal by the federal government. It is now seven feet deep. It is believed that the state of New York would be willing to dispose of the canal to the federal government without cost to the latter. Another plan contemplates a canal around Niagara on the American side, corresponding to the Welland canal, and then from Lake Ontario by canals and natural watercourses to the Mohawk and the Hudson.

The plan to connect the Great Lakes and the Ohio river is not new, but has been presented in new form by Representative Ikert, of Ohio. As heretofore proposed, the plan has been to construct a canal from the east end of Lake Erie to the upper Allegheny. Dr. Ikert's plan is for a ship canal which shall start from one point at or near the city of Cleveland and follow the course found most practicable and direct to the Ohio river. His bill appropriates $30,000 to be expended by the corps of engineers, though the plan has not yet been endorsed by a House committee.

The connection of the great St. Lawrence and Mississippi systems at their sources is proposed by the Fletcher bill, which has received the indorsement of the House Committee on Railways and Canals. This bill provides for an examination and survey to be made between a point in the state of Minnesota, situated on the Mississippi river, and some point on Lake Superior, for the purpose of determining the practicability and cost of constructing a canal with a capacity for vessels. The appropriation recommended is $10,000. In the report of the committee no less than five routes are suggested.

"The possibilities of a Superior and Mississippi canal as a benefit to the northwest," says the committee in its report, "are quite beyond conception on immediate demonstration. An enormous saving of freight charges of course, at first suggests itself. On the Great Lakes the average cost of transporting a ton of freight one mile is estimated to be one-tenth of a cent. Were this cost doubled over the 200 or 300 miles of canal, there would still remain a margin of saving over the cost of railroad transportation of 60 or 70 per cent. It is possible that a saving of from 50 cents to $1 per ton would be effected on every ton of freight transported between Minneapolis and the east. This does not seem a large amouut, but in the aggregate the saving would be tremendous. During the year 1893 some 10,800,000 tons of freight passed through the 'Soo' canal, in and out of Lake Superior. If the canal avoided the necessity of breaking bulk at Duluth, a further saving of thirty to forty cents a ton would be effected."

Gen. T. J. Henderson, of Illinois, who has had long service on the House Committee on Rivers and Harbors, says that the most feasible of all the great lake canal projects was the one for a canal from Lake Michigan to Lake Erie across lower Michigan. It was also the simplest and the cheapest.

ITEMS FROM THE LOG BOOK.

Among the passengers to Duluth on the first trip of the North West will be three bridal parties from Cleveland.

Capt. Rouleau has placed a new red buoy in "the Soo" river below the Neebish where the Merida struck last season.

Beginning on June 1 the weather observer at Chicago will forecast the stage of water at the Sault by calculations upon barometric pressure.

The steamers George A. Gould and S. C. Reynolds have been chartered by the Great Northern Co. for two cargoes of miscellaneous merchandise from Duluth to Buffalo.

According to a Washington special the resignation of Alexander McMasters, supervising inspector of steam vessels at Buffalo, has been requested by the Secretary of the Treasury.

The Guion Steamship Company has decided to go out of business because of a lack of patronage. The crack Atlantic liners Alaska and Arizona will be sold in Liverpool at an early date.

Capt. Sidney Millen, the newly appointed local inspector at Detroit, will be succeeded on the steamer Iron Chief by Capt. H. Bogart, who was master of the steamer Minneapolis when she foundered this spring in the straits of Mackinaw.

A report comes from Owen Sound, Ont., that a Minneapolis and Duluth syndicate will erect a huge elevator at that port, and operate a barge line between the head of Lake Superior and Owen Sound.

It is claimed for the steamer E. A. Shores, Jr., that she is the fleetest lumber carrier on the lakes. Loaded she averages twelve miles and can easily be forced to fourteen miles an hour. The combination Scotch type and water-tube boilers placed in the Shores this spring have proved a complete success.

The steamer Charmer has been sold by Herman and Charles Dahlke, of Chicago, to Frederick Klunder, of Kenosha, for $1,000, also the steam sand scow Hiram R. Bond by Thomas R. Bentley to the Milwaukee Sand & Gravel Co. for a nominal consideration.

Stewart Moore, late local inspector of steamboats at Chicago, has asked Secretary Carlisle, of the Treasury Department, for a hearing on the charges which led to his summary removal. Several vessel owners have also written, requesting a hearing. The charges are that Moore neglected his duty and wrote impertinent letters to Secretary Carlisle. He denies both charges and stated that he has not written to the Secretary for a year past.

Capt. John G. Keith has returned to Chicago from Central America, where he has been for two months. It is reported that he went there as agent of the whaleback interests to establish a line between New Orleans and Central American ports and to work up a business. It is also stated that three or four steamboats of the whaleback type will be taken down the St. Lawrence and across to Liverpool in a few weeks, and be loaded for Central America to go on the regular line when they arrive there.

The first cargo of lumber to clear from Ashland las season was carried by the Jay Gould on May 1 th. The difference in shipments may be contrasted when attention is called to the fact that shipments from Chequamegon Bay, so far, aggregate over 27,000,000 feet. The average price of the lumber shipped is about $11 per M, which foots up to $289,695 as the value of the Chequamegon Bay shipments thus far. No port on the chain of lakes has a record approaching it and it has never been equaled before at Ashland at this early season.

Canadian vessel owners protest against the American steamer Marquette carrying Canadian grain for export from Port Arthur, Ont., to Ogdensburg, N. Y., to be there transferred to St. Lawrence River barges for Montreal. The claim is made that the United States would not permit Canadian vessels to carry American wheat from American ports if it was passed in bond through Canada back into the United States. Canadian vessel owners, it is stated, will appeal to the Dominion Government to have the Marquette barred out of her present charter. Canadians evidently desire reciprocal coasting privileges, a feature which no amount of agitation could bring about.

As far as known twenty-three steam and sail vessels stranded or foundered during the great May storm. Of the twenty-three at least fourteen, with a measurement of 3,500 tons and valued at $55,000, are total losses, or reported as such. The total tonnage involved is 6,593, and the valuation $152,000. According to the data obtainable, thirty-five lives were lost during the storm, of which thirty-one may be credited to Lake Michigan People swept from the breakwater at Chicago, whither they had gone to fish, helped to swell the fatalities considerably. The actual losses by shipwreck on Lake Michigan were twenty-two.

Owners of the schooners Jack Thompson and Rainbow, which were lost off Chicago in the recent great storm of May 18, are reported to have engaged counsel and will institute a suit for damages against the tugs for failing to pick the schooners up when in distress off Chicago. It is not claimed that the tugs had lines from the schooners at any time, but by their alleged negligence in failing to pick up the schooners, which were drifting on to certain destruction, the tugs become liable for the loss. It is said that this is the first time that such a point has been raised in the United States. The tugmen deride the claim, but some marine lawyers think there is a fighting chance of success for the owners in the proposed suits.

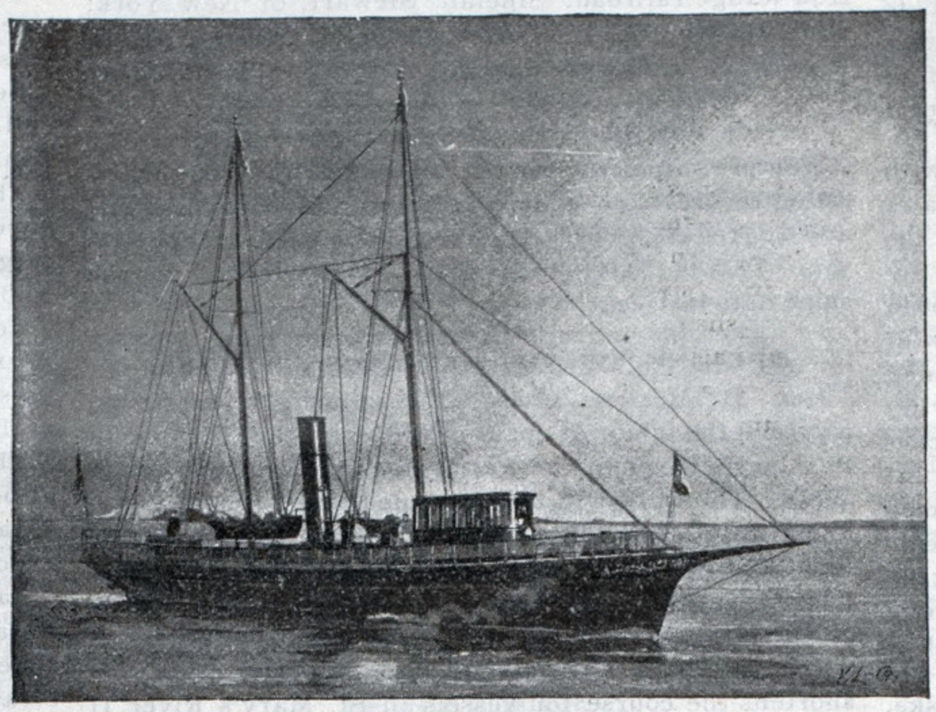
STEAM YACHTS.

(ILLUSTRATED.)

The multi-millionaires residing in the states bordering on the Great Lakes have seldom gone further afield than a lake shipyard when requiring a handsome and luxuriously fitted steamyacht. This, however, can not be said of all wealthy Americans, some of whom there are who possibly imagine that "pride of build" or the expenditure of American earned money in home shipyards "cuts no figure" in a patriotic, political or patronal sense.

It is a matter of record that lake shipyards are now turning out yachts capable of circumnavigating the globe and living wherever a keel has ploughed. The ability of yacht builders to construct and equip the most advanced types of miniature floating palaces only stand in need of an interested request to be amply demonstrated.

The yacht "Idler" herewith illustrated is a product of the Detroit Boat Works, one of the most advanced and reliable firms doing business in the United States. The officers of the company are men well known for their professional, business and workmanlike attainments. We also know that they are all mighty modest men and care not to see their "numbers" in cold type. The foregoing is positive and truthful, but as yachts is the topic and not men, we come back to our caption.



"IDLER," BUILT FOR SENATOR JAMES McMILLAN.

The dimensions and construction of the "Idler" is as follows: 120 feet long on deck, beam 16 feet and a depth of 8 feet 3 inches. She is flush-decked, built of North Carolina white cedar on the diagonal plan. Frames are of hackmatack and of double 3-inch flitch; keel, keelsons, stem and sternpost are of white Michigan oak; decks of Michigan white pine. All upperworks are finished in mahogany. The deck-house is used for pilot-house and smoking-room. The accommodations below are ample for a lake or ocean cruise. There are four staterooms for guests, finished in mahogany and silk upholstery. Electric appliances are distributed all over the boat. The machinery consists in a triple expansion engine, cylinders 9 and 14½ and 24 inch bore by 14 inch stroke; the boiler is made by the Roberts Safety Water Tube Boiler Co., of New York and allowed a working pressure of 200 pounds. With full opening of throttle the engine makes 290 revolutions, giving the boat a speed of 17 miles an hour.

The magnificent yacht Bonita was built by Mr. Mark Hopkins of St. Clair, Mich. She has proven herself one of the most successful yachts on these waters. She is 125 feet long and 16 feet beam; built of wood, oak framework, cedar planking; all mahogany upperworks and cabin. Triple expansion engine, 9¼" 14½" and 24" cylinders by 14" stroke, built by Samuel F. Hodge & Co., Riverside Iron Works, Detroit, and the Roberts water tube boiler. Dimensions: 5 feet by 7 feet; Dean independent air pump; electric light installation and elegantly finished. Her speed is 17 miles per hour.

Notwithstanding the present dull times, the Detroit Boat Works are among the firms that are working "wide open." Among the present orders under construction we find the following: One 30 foot electric launch for the American Electric Supply Co., Buffalo; one 40 foot twin screw cabin launch all finished in mahogany, fitted with gas engines for R. E. and C. J. Bousfield, Bay City; one 25 foot launch for New York; another one for C. H. Haberkorn, of Detroit; a 34 foot mahogany planked electric launch for Hiram Walker, of Detroit; a 40 foot by 14 foot beam, yawl rigged sharpie for a Sandusky party; a 20 foot double cat boat for J. F. McKeough, Chatham, Ont.; and 18 foot double catboat for Gilbert McMillan, Detroit; a 20 foot double cat, keel boat for E. Brady Wendell and a 40 foot schooner rigged, deep keel, 6-ton sailing yacht for Harry B. Joy, of Detroit, and a number of smaller sailboats also being built. The shell department has been exceedingly busy furnishing rigging, oars and outfits for Eastern University crews and is now busy on a number of gigs, barges and shells. Taken altogether the Detroit industry is perhaps one of the briskest on the lakes at this time although a portion of their product may in a measure be classed as a luxury.

"BONITA," BUILT FOR MR. MARK HOPKINS.

A LIFE SAVING DEVICE.

"The Kite as a Life Saver" is the title of an illustrated article by J. Woodbridge Davis, 25 West 119th street, New York, in the *Engineering Magazine*. The author has made a study of the use of the kite for the purpose of off shore communication, and the results of experiments are given in the article, which he has had reprinted in pamphlet form for distribution to those interested in the subject.

JUNE ASTRONOMY.

Mercury will be the evening star during June. On the 22d he will be at his greatest distance (elongation) east from the sun, and will set about an hour and a half later than that body. This month will be a good time both for daylight and evening observations of this planet. Its phase will be gibbous during the first half of the crescent during the last half of the month. The moon will pass by Mercury on the evening of June 4, conjunction in right ascension occurring at 10 h. 32 m. central time.

Venus will be the morning star, rising about two hours before the sun. She is getting around toward the farthest side of her orbit, so that her brightness is decreasing considerably. At the same time her phase is becoming more gibbous.

Considerable has been said lately about the dark part of Venus being visible, just as the dark part of the moon is visible. Several observers claim to have seen the complete outline of Venus' disc a few days before she disappeared in the rays of the sun this past winter, when her crescent was very narrow. We may say, I think, this visibility is not from the same cause that renders the dark part of the moon visible, viz.: reflected earthshine. Venus is more than 100 times as far as the moon from the earth, and therefore, would receive less than the ten-thousandth part of the light thrown upon the moon. The most probable explanation is that Venus has a dense atmosphere, possibly more extensive than that of the earth, so that her twilight is longer and extends far enough into the dark hemisphere to become visible from the earth as a complete ring of light when the crescent of direct illumination is small. The observer discerning the outline of the dark part of the planet, by this faint ring, would naturally have the impression of seeing it all.

Mars will be seen at quadrature, 90 degrees west of the sun, June 17, and will be in position to be observed after midnight during this month. Mars will move north-east during June, from Aquarius across a little corner of the Pisces into Cetus. The phase of the planet will be smaller this month than at any other time in the year, only .84 of the disc being illuminated. Mars will be in conjunction with the moon, about 3 degrees south of the latter, 48 m. after midnight, June 25.

Jupiter and Neptune are not to be seen during June.

Saturn is making the turn of the loop in his apparent path among the stars of Virgo. He will begin to move eastward after June 21. The amateur should not fail to make the most of these summer months in the study of this planet. The surface markings on so bright a planet are almost as likely to be seen with a small telescope as with a large one. The moon will pass by Saturn, 4 degrees south of the latter, June 12, at 2 h. 41 m. p. m., central time.—*Popular Astronomy.*

MARITIME LAW.

LAING v. THE ALLEN GREEN.

Circuit Court of Appeals, Second Circuit. February 27, 1894.

COLLISION—STEAMER AND SAIL—BROKEN RUDDER CHAIN—LOOKOUT. A steamer meeting a schooner put her wheel over to avoid her, when the rudder chain broke. It appeared that the broken link was reduced one-third by wear, and the chain was open to inspection. The steamer immediately sounded danger signals, but these, owing to the absence of a lookout on the schooner, and a discussion going on between the master and crew, were not noticed by her in time to avoid collision, although there was ample time to do so. Held, that both vessels were in fault. 53 Fed. 286, affirmed.

Appeal from the District Court of the United States for the Southern District of New York.

These were cross libels filed by Arthur Laing and Arthur L. Nickerson, respectively, to recover damages for a collision between the steamer Riversdale and the schooner Allen Green. There was a decree below for divided damages (53 Fed. 286), and both parties appeal. Before Wallace, Lacombe and Shipman, Circuit Judges.

NETHERLANDS AM. STEAM NAVIGATION CO. v. NEGRE et al.

Circuit Court of Appeals, Second Circuit. March 13, 1894.

COLLISION—SAILING VESSEL AT ANCHOR—FOG SIGNALS. A fishing bark anchored in a fog was about to change her position, when she was run into and cut in two by a steamer going at an excessive speed. At the time the bark's crew were engaged at the windlass, but there was a conflict of evidence whether the anchor had yet left the ground. The bark, at any rate, had not yet gathered headway. Her bell had been kept ringing until collision, and the fog horn had not yet been sounded, though it was in readiness for use. Held, that, even if the anchor had left the ground, the failure to change the fog signal from bell to fog horn was not a fault contributing to the collision.

Appeal from a decree of the District Court, Eastern District of New York, in favor of the owners of the French fishing bark Christophe Colombe for the recovery of $27,794.50, collision damages, against the steamship Obdam.

The material facts are stated in the opinion of this court, infra. The conclusions of the District Court were announced in the following opinion by Judge Benedict:

My conclusion in this case is that the collision in question must be held to have been caused by the fault of the steamer in maintaining a rate of speed which was unlawful under the circumstances, and was not caused by fault on the part of the bark. Let a decree be entered in favor of the libelants, with an order of reference to ascertain the amount of the damages.

In re HUMBOLDT LUMBER MANUF'RS' ASS'N.

District Court, N. D. California. February 21, 1894.

1. DEATH BY WRONGFUL ACT—JURISDICTION—HIGH SEAS. Code Civ. Proc. Cal. §377, provides that, where the death of a person is caused by the wrongful act of another, the heirs or personal representatives of the deceased may maintain an action for damages against the person so causing the death. The constitution and Political Code of California fix the the western boundary of the state, and of its counties, on the Pacific ocean three miles west of the shore line. Held, that the territorial jurisdiction of the state extends over this three-mile belt, and such section 377 gives a right of action for wrongful death occurring on the high seas two miles from shore.

2. ADMIRALTY — LIMITING LIABILITY — DEATH BY WRONGFUL ACT. The death of a person was caused by the capsizing of a schooner two miles from the shore line of Humboldt county, California. The crew were drowned and the personal representatives of some of them brought actions in the state court against the owners of the tug which had the schooner in tow at the time of the accident. Held, that the admiralty court for the proper district has jurisdiction to stay such actions, to determine the liability of such owners under the limitation of liability act, and to enforce the rights that accrued to such representatives under the laws of California by reason of the acts complained of.

3. SAME—NEGLIGENCE—EVIDENCE. The schooner Fidelity, in tow of the tug Printer, was capsized while crossing Humboldt bar, and all hands drowned. This bar is so shifting, and the channel in consequence so uncertain and dangerous, that it cannot be navigated without a skillful pilot. At the time of the accident the tide was strong ebb, running four knots or more an hour, and there was an adverse wind, blowing about nine knots, which was strong enough to back the ebb tide. The bar was extremely rough, the sea breaking in six or seven fathoms of water. The captain and mate of the tug testified that the schooner was capsized by an unexpectedly heavy swell, because she had no ballast, but they did not pretend to have discovered this when they took her in tow; and she had made a voyage of 500 miles before reaching the bar, in a stormy season. A number of pilots and seafaring men testified that the condition of the bar at the time made it unsafe to attempt to tow across it, and the lifeboat was unable to reach the capsized vessel. Held, that the accident was due to gross and inexcusable negligence on the part of the master of the tug.

4. SAME—LIMITING LIABILITY—PRIVITY OF OWNER. On a libel for damages, the question whether there was not such privity between the owner and the master in the negligence of the latter as to take the case out of the provisions of the limited liability act will not be considered when the amount of damages proved is less than the stipulated value of the vessel.

5. SAME—MEASURE OF DAMAGES. Under Code Civ. Proc. Cal. §377, which provides that for the death of a person by the wrongful act of another "such damages may be given as under all the circumstances of the case may be just;" $7,000 is just compensation for the death of a shipmaster, aged 35 years, whose wages were $100 per month, and who left a widow and two children; $5,000 for the death of a ship's cook, aged 39 years, who received $50 per month, and left a widow and three children.

MORROW, District Judge.

FOR IRON AND STEEL PLATE WORKERS.

The results of a large number of tests of punches of different forms were given recently by George S. Allen, Cleveland, in his Case School graduating thesis. The experiments were made to determine: (1) Which of the various shaped punches now in common use for punching iron and steel did its work with the least maximum pressure, and the relation of unit stress to distortion as the punch passed through the plate; (2) the effect of clearance upon the power required by the punch; and (3) the effect of the form of punch and the amount of clearance upon the tensile strength of the punched plate. The results of the test may be summarized as follows: (1) A punch to work easily and not injure the metal should not be cupped out. (2) A double punch; that is, one which first punches a small hole and then reams it out by means of a shearing counter-punch, leaves the plate stronger, but requires at least twice the power necessary to run a flat punch. (3) The ordinary flat punch leaves the plate about 90 per cent. as strong as a drilled and reamed plate. (4) A milled spiral punch is preferable to one which has the spiral cut in a lathe. (5) A single spiral requires less pressure than a double one and leaves the metal about as strong. (6) A single sloping or whistle-shaped punch does its work with the least consumption of energy. (7) Between the limits of 0.01 in 0.05 in., clearance has no effect on the power consumed by a punch or upon the strength of the punched plate.

NOTICE TO MARINERS.

ST. JOSEPH PIERHEAD LIGHT-STATION—Notice is hereby given that on or about June 12, 1894, St. Joseph pierhead light tower, on the N. pier at the entrance to St. Joseph harbor, E. side of Lake Michigan, Michigan, will be moved about 100 feet nearer the outer end of the pier and the light exhibited and fogbell sounded therefrom as heretofore.

On the same date St. Joseph pierhead (front) light will be moved about 300 feet to a point on the extension of the N. pier, near its outer end, and exhibited from a lantern in an enclosed glazed end of a conduit, extending shoreward 290 feet to the pierhead light tower in its new position. The distance between the lights will then be about 300 feet, and the lights will, as heretofore, form a range for approaching the harbor, the range line approximating the line of direction of the outer end of the N. pier. The characteristics of the lights will not be changed.

This notice affects the List of Lights and Fog Signals, Northern Lakes and Rivers, 1893, page 50, Nos. 1296 and 1297, and the List of Beacons and Buoys, Northern Lakes and Rivers, 1893, page 79.

By order of the Light-House Board.

JAMES A. GREER,
Rear-Admiral U. S. Navy, Chairman.

Office of the Light-House Board, Washington, D. C., May 31, 1894.

NEW BUOYS IN OSWEGO INNER HARBOR.—Two large black and white spar buoys were placed on June 4th, 1894, by the U. S. harbor engineers to mark the upstream limit of deep water in front of the Northwestern elevator and of the N. Y., O. & W. R. R. coal trestle in Oswego harbor. The buoys are placed on the edge of the rock excavation made last year and vessels can carry (17) seventeen feet draft up to them. Steamers are cautioned not to foul the buoys with their wheels.

By order of Capt. DAN C. KINGMAN,
Corps of Engineers, U. S. A.

CAR FERRIES.

It has just begun to dawn upon the minds of those engaged in the commerce of the Straits of Dover that the means employed in the United States for ferrying railroad cars across the lakes, rivers and straits, might also be adapted for the short haul between England and France. A New York paper says: "There seems to be nothing in the way of running unbroken trains between London and Paris, except the necessary capital and the employment of sufficient technical skill. If the London, Chatham & Dover would combine with the Northern of France, and employ an experienced American engineer to plan and construct the docks and appliances for embarking and landing the trains, and at the same time send to any of the shipbuilding establishments on our great lakes for a man to construct the ferry-boats, the arrangements could be perfected in a year and a half or two years, when freight and passengers could be transported from any part of Great Britain to the Continent, and eventually to all of Asia and Africa, without change of cars or break of bulk."

All this to the contrary, notwithstanding it should be remembered that "car ferries" have also been dealt with to a somewhat limited extent on the other side and perhaps the service on the Mersey is a most authentic as well as an original plan. There we have a ferry steamer propelled by four screws, an innovation never thought of on the lakes, that is, double screws at each end.

Still reaching into this subject, *Transport*, of London, pertinently observes that Mr. Andrew Brown, M. Inst. C. E., recently gave way to some instructive remarks regarding American ferry steamers, which, he said, were generally of large and powerful build and in most cases fitted up in a complete manner, so far as comfort was concerned. The Bergen, built in 1889, was the first ferry steamer employed in New York harbor that was propelled by a screw at each end of the hull. She is still running between Hoboken and New York. The latest addition on that station is the Netherland, built last year. She is also a two screw steamer, but larger and more powerful than the Bergen. Both were designed for vehicular and passenger traffic. The railway trans fer ferries present quite a different type of vessel from those used for passenger service, their engines being chiefly horizontal, placed on the guards, and driving the paddlewheels independently. He instanced the two powerful steamers—Michigan Central and Transfer—which were built for the railway service on the Detroit river between Detroit and Windsor, Ont., by the Cleveland Ship Building Co. The steamers plying between St. Ignace and Mackinac City, in the Straits of Mackinac, which is seven miles wide—vessels especially adapted for working in heavy ice and in more open water—were also referred to, as well as the Salano, which carries railway trains across the Straits of Carquenez between Porto Coto and Benicia.

INCRUSTATION AND DEPOSIT IN BOILERS.

At a meeting of the Junior Engineering Society, recently held in London, an interesting lecture on "Boiler Incrustations and Deposits" was delivered by Prof. Vivian B. Lewes. The lecturer having pointed out the serious injury occasioned to boilers, and the waste of fuel due to the formation of incrustations, traced the history of various sources of water supply, and showed how the water acquired the power of forming deposits in steam generators. These deposits consist mainly of calcic carbonate, calcic sulphate, magnesic hydrate and silica, the chemical processes which lead to their deposition in the feed-water differing in each case. Calcic carbonate, which constitutes the principle ingredient in fresh water deposits, is thrown down in a dense form by the breaking up of soluble calcic bicarbonate under the influence of heat, and if it is nearly pure it forms a mud in the boiler, which can to a great extent be got rid of by blowing off. Calcic sulphate, however, is deposited by an entirely different action, as its solubility decreases with rise of temperature, high pressure or great increase in the saline properties of the solution; and its wonderful power of hardening deposits and binding them together into an incrustation, which can only be removed by the use of hammer and chisel, makes it a most dangerous constituent of such deposits. This hardening power is due to the fact that it deposits from water in the form of small angular crystals, and in this form gets mixed with the calcic carbonate mud. As these crystals become heated, they lose water of crystallization and change their form into fine needle-shaped crystals, which bind the mass together. Magnesic hydrate, which is found in many scales, has always been supposed to be due to decomposition of magnesic chloride at a high temperature; but this is a mistake, the magnesic hydrate being produced by the interaction of magnesic chloride and calcic carbonate, which results in the formation of soluble calcic chloride, evolution of carbon dioxide and deposition of magnesic oxide, which, by combination with water, forms the hydrate. Examples were given of scales from various waters, and it was shown that fresh water incrustations may be looked upon as consisting chiefly of impure calcic carbonate, while the deposit formed by the use of sea water is principally calcic sulphate. Brackish waters give incrustations consisting of nearly equal portions of these substances. The question of oily deposits on plates was next considered, and the lecturer stated that, according to recent researches, mere wiping of a boiler plate with a greasy rag causes a serious diminution in its power of transmitting heat, while with an oily deposit one-sixteenth of an inch in thickness plates in some cases become so overheated as to be unable to withstand the pressnre upon them, and collapse of the furnace crowns not infrequently takes place. The question of anti-incrustators was then dealt with, and the lecturer expressed his opinion that if manufacturers were obliged to use a hard water, the most reasonable method they could adopt was to soften it on large scale before putting it into the boiler, as otherwise serious complications were likely to arise in the boiler itself.

THE MARINE RECORD

ESTABLISHED 1878.

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NO FUEL is the report from all points, and lake transportation must perforce subside until the miners get to work again. Even with the dearth of fuel during the past week freight quotations have not improved, although the best of hopes are held by vesselmen regarding better freight rates in the near future.

WHY the Canadian vessel owners should protest against our coastal laws it is difficult to imagine, when it is universally understood that no vessel of whatever form or nationality, may trade between United States ports without being duly registered American tonnage. Hence, the kick made by the Canadians this week relative to American vessels trading between foreign ports is and must be futile.

LIFEBOATS.

Evidently the gale of May 18th and consequent loss of life on Lakes Michigan and Huron has had the effect of granting to lake life saving stations a more liberal equipment.

The Department recently advertised for bids on eight new life boats for lake service and closely followed this action by asking for proposals for ten life boats of the English type, six of which are to be delivered at Grand Haven, Mich., presumably for Lake Michigan stations.

The former set of boats are to be self righting and self baling, with water ballast and center boards, exclusively for lake use, while the latter are the seaworthy, though heavy and cumbersome type which has done such excellent work for the national life boat institution on the rock-bound coast of England.

There are no doubt many persons who believe that the English type of lifeboat is not the one best adapted for lake service; in fact, the institution spoken of appears to be letting go of its former models and trying steam. In this connection, a new steam hydraulic lifeboat has just been added to the fleet of the British institution and on trial the righting efficiency showed that she could be safely heeled over 105 degrees either side and would quickly recover herself. If we mistake not, there is also a steam lifeboat placed at the mouth of the River Mersey and one at Harwich. These departures are evidence enough that a change from the former type has been considered essential.

Where so much life is at stake it would surely be in the best interests of humanity for Congress to appropriate a sufficient sum to carry out thorough tests of the most recent inventions for life-saving purposes, and place at least one powerful life-boat with mechanical means of propulsion on each lake, the location to be determined from the wreck records of the inland seas.

OIL AS A WAVE QUELLER.

The idea of pouring oil upon troubled waters is so old and has been used in a figurative sense so much that the great majority of people, vessel men included, do not think of using it in a practical way, even while admitting its efficiency. Navigators have regularly discussed the subject and not a few use oil bags to good advantage. The pilot chart of the Atlantic Ocean, published by the Hydrographic Department, U. S. N., recently contained a great many letters from navigators who had tried this experiment with so much success that many had adopted it and provided their vessels with oil bags or oil tanks for use in stormy weather. Capt. Penney, of the British steamship Camellia, gives an account of his experience in a hurricane, where the seas continually swept the decks, carrying all boats and deck-houses away. "We decided to run before the sea to a port of refuge," says Capt. Penney, "which I believe the ship could not have done without the use of oil. It had a magic effect on the broken crests of the huge waves, and enabled us to turn ship in safety. The gale followed us all the way to a harbor of refuge."

Water and oil have no affinity for each other, but air and water have. Hence a thin sheet of oil spread over water breaks the grip, so to speak, of the air, while it endeavors to absorb or lift the water in its embrace. When the atmosphere is in violent motion its power of absorption is increased; also is its grip on the water's surface more tenacious. Without affinity of air for water there would be no ascent of water and no precipitation of it.

Recent correspondence from Lieut. Blow, U. S. N., in charge of the branch Hydrographic Office at Chicago, contains the statement that if "the vessels anchored off this harbor during the recent gale used oil or soapsuds in the manner described in the Pilot Chart of the Great Lakes, it is probable that no lives or property would have been lost." The Lieutenant may be too sanguine in his assertion, although he evidently has the courage to broadly enunciate his convictions relative to the efficacy of oil on troubled waters.

Unfortunately, it is the smaller and less seaworthy class of tonnage that requires an oil distributing device, and the appliance, carried season after season without any use being made of it, becomes an eyesore and is likely to be regarded as so much useless lumber in the vessel's equipment. The smaller sail tonnage and steamers with consorts ought no doubt to have some means of distributing oil upon the waters, but it is doubtful if the owners of large, powerful steamers would add oil bags to the equipment list of their fleet or create a necessity in any direction where none exists at present.

FUELING.

The coal miners' strike is nearing the end, and district presidents of the miners' association are given authority to get their men to work on the best terms procurable.

This feature clearly announces the termination of the recent troubles, though it will of course be some time before the full tide of production can find its way to points where even now coal is greatly needed.

Owing to the low rates of freight prevailing, the vessel interests on the lakes have not felt the lack of fuel in so great a degree as stationary industries and the railroads, although when passenger line boats are prevented from running on their schedule time, as they have been this week, the scarcity of "black diamonds" even for transportation purposes, is beyond question.

The attempt to burn hard coal in the grates of freight steamers will, if their records have been closely kept, furnish interesting experiences to vessel owners in case another coal famine should transpire at any future time. The mixing of anthracite with bituminous coal is also prone to show developments in regular line and passenger boats hitherto unknown, and it is possible that where high speed and cleanliness is a consideration more hard coal will be used in the future than in the past solely on account of the experience gained during the strike.

Oil as a liquid fuel has been used only in one instance, and that in the tug business at Chicago. So far as the experiment has gone the most satisfactory results are said to have been obtained. In some small freight steamers the wood pile has been visited, but there is nothing to learn on economical lines relative to the use of wood for fuel, even with the underwriters' permit to use it, as fire policies are conditioned on the vessel burning coal. So also is the efficiency of hard coal in place of ordinary fuel yet to be fully demonstrated.

However, the Columbus meeting on Tuesday night of the miners' representatives lifted the embargo so that the different sections can now make their own terms with operators. This does away with the national feature of the combination, and in a measure disrupts the federal organization of coal miners, so that future disagreements will be merely sectional, and therefore less likely to seriously interfere with the trade and commerce of the country.

STAGE OF WATER AT ST. MARY'S FALLS CANAL.

DEPARTMENT OF AGRICULTURE, WEATHER BUREAU.

Depth of water at the St. Mary's Falls Canal for the week ending June 7, 1894:

June	1	8 a. m.,	15	feet	1	inches.	8 p. m.,	15	feet	0 inches.
"	2	"	15	"	0	"	"	15	"	0 "
"	3	"	15	"	0	"	"	15	"	0 "
"	4	"	15	"	0	"	"	15	"	0 "
"	5	"	15	"	0	"	"	14	"	9 "
"	6	"	14	"	11	"	"	14	"	10 "
"	7	"	15	"	0	"	"			

LAKE FREIGHTS.

Ore tonnage from the head of Lake Superior is in fair demand at 80 cents. Marquette and Escanabe rates are still at 65 and 50 cents, respectively. Buffalo coal rates to Chicago and Racine are the same as last week, 45 cents; a charter for Michigan City was placed at 55 cents. Sheboygan, Milwaukee and Kenosha, 40 cents; Saginaw, 35 cents; Toledo, 25 cents, and Duluth 15 cents—3 cents on wheat, 2¾ cents on corn and 2⅜ to 2½ cents on oats to New York. Chicago rates are at 1⅞ cents on corn to Buffalo. Kingston light chartering at 2½ cents on corn. Oswego coal rates: Chicago, 75 cents; Milwaukee, 70 cents; Toledo and Duluth, 50 cents. Milwaukee to Buffalo 1¼ cents on oats. Duluth 2¼ cents on wheat to Buffalo, vessels asking 2½ cents. Quoted rates on lumber from Bay City and Saginaw are: Bay City to Tonawanda, $1.50; to Ohio ports, $1.25; Saginaw to Ohio ports, $1.37½; to Buffalo or Tonawanda, $1.62½.

POLAR EXPEDITIONS.

Among the dozen or so of polar exploration expeditions now being prosecuted with more or less chances of success, Gen. Greeley says that the expedition commanded by the Washington correspondent of the *News* and the Chicago *Herald* is the one that promises the best results. "Without doubt," he says, "the most interesting and promising of the present polar expeditions is that led by Mr. Walter Wellman, of Washington." In his review of the chances of the Wellman party, Gen. Greeley says:

"The route and plan followed by Mr. Wellman are integral parts of the scheme advanced by Parry in his letter to Sir John Barrow Nov. 25, 1845. * * * With those other Americans as scientific assistants and 10 picked Norwegian sailors, Wellman, who is now in Norway, leaves Tromso early in May, 1894, for Dane's Island, about 79 degrees 45 minutes north, off the northwest coast of Spitzbergen. Wellman's steamer will not stop at Dane's Island on its outward voyage, but will push northward to the margin of the impenetrable icepack, upon the surface of which will be landed the traveling party, with boats, sledges, dogs and accoutrements. The steamer then returns to its selected haven at Dane's Island, where food and fuel are to be landed and a house erected. The plan further contemplates the return of the exploring party to Spitzbergen about the middle of September, whence the whaling steamer should bring them to Tromso or Hammerfest about the middle of October.

In 1827 Parry attempted over this route a similar journey during which he reached 82 degrees 45 minutes north. * * * To succeed, the Wellman party must be favored with unusually smooth ice, an unbroken, fixed pack, very open sea to the north of Spitzbergen, or strong, continued southerly gales which would set the ice-pack to the northward.

The writer has always held this to be the most promising route by which to obtain a very high latitude, but he has thought that success must be the result of chance rather than of effort. No vessel that was ever built could penetrate the ice fields and no body of men could ever hope to reach the ice floes to the northward of the 83d parallel to the north of Spitzbergen, under ordinary ice conditions. With favoring ice and wind, however, any well-found steam whaler would reach the limits of the loose and disintegrating ice, whether it be in latitude 84 degrees or 87 degrees.

UPBUILDING AND DECLINE OF THE MARINE.

BY RICHARD P. JOY.

The early statesmen of the republic fully appreciated the importance of Americans transporting their own commerce in their own vessels, and of keeping the money at home which otherwise would have been paid to foreigners. To achieve this end they enacted laws in 1798, during the first Congress, which discriminated in favor of American-built ships; thus goods imported in American vessels were permitted to enter this country under ten per cent. less duty than goods imported by foreign ships, but this system built up the American marine so rapidly that the revenues of the government were seriously affected, and it soon became necessary to altar the act, so that goods imported in foreign vessels were compelled to pay an additional duty of ten per cent., and goods imported in American ships paid the regular duty; thus the revenues of the government were increased and the marine continued its steady growth.

After the war of 1812 a treaty was made with Great Britain by which the United States agreed to discontinue the system of discriminating duties then in force. Our commissioners were simply outwitted by the British commissioners, and we sacrificed our right to legislate in favor of our marine at that time. It was greatly to Great Britain's disadvantage that we maintained our system of discriminating duties, as British shipping could not compete with protected American shipping without carrying goods at reduced rates. Thus, every effort that could be put forth was directed against this system, to which we owe our start in the world's carrying trade, and by outwitting the American commissioners Britain achieved the desired end, and our vessels have been driven from the seas. But our shipping had received such an impetus from discriminating duties, and our ships were so superior to those of foreigners, that the American ship continued to be the favorite with

shippers in all lands for years after the protection was removed.

At this time we could construct ships almost as cheaply as could foreigners, for the reason that material could be had from our forests with great facility, and, our ships having superior sailing qualities, could still compete with foreigners; but the change from wood to iron as a ship building material was soon to be felt, and as an iron vessel of the same dimensions as a wooden vessel could carry many more tons of cargo, the cry was for iron ships. Our iron industries were as then undeveloped, and, not having the benefits of discriminating duties, we were obliged to submit to the inevitable. Thus our shipping became the victim of circumstances from which no party has endeavored to extracate it.

CIRCUMSPECTION OF UNDERWRITERS.

It is generally admitted that the underwriters of London Lloyds keep what may be termed a reputation list of vessel masters. It is not known, however, that such is the custom with the Inland Lloyds, although to a certain extent repeated casualties are noticed, and in one case a few years ago a master who was considered extremely unfortunate in getting into trouble was discriminated against in the matter of insurance, and consequently was obliged to find some other occupation. He is now, we believe, plowing the land instead of the lakes. The following abstract from the proceedings of the annual convention of lake underwriters, held in Buffalo, January 8, 1856, is positive proof that at that time the masters in charge of floating property were to undergo a scrutiny which we are happy to say it has not been found necessary to perpetuate to the present date. The action taken thirty-six years ago was as follows:

"The committee to whom was referred the subject of registering the names of vessel masters, respectfully submit that they are of opinion that by far the larger proportion of disasters happen through the incapacity of the master in charge. The great and rapid increase of the tonnage of the lakes has brought into service, as masters, a large number of persons wholly inexperienced and incompetent for the duties they assume; a fact sufficiently proved by the known character of the last year's losses.

"With a view of obtaining such information as may enable underwriters to more fully understand the true character of risks undertaken, as well as to offer all possible encouragement to deserving and meritorious officers, the committee recommend a thorough examination into the capacity and character of every vessel-master employed on the lakes.

"They recommend that blank sheets be prepared by the secretary for the use of the inspectors, and that he be instructed to ascertain the age, residence, time of service as seamen, mate and master, whether married or single, vessels commanded heretofore, disasters that have occurred whilst in such command, and habits of life generally of all vessel-masters within their respective beats, with such other facts as may come to their knowledge, as shall truly illustrate the character of each person reported. Such reports to be sent to the secretary, who shall transcribe the same, alphabetically arranged, in a book prepared for the purpose. Copies of such reports shall be sent to each company forming this association.

"They further recommend that the executive committee carefully examine these reports, and select therefrom the names of such persons as shall in their judgment deserve to be placed on record as approved masters; men of integrity, prudent to avoid danger, prompt and energetic when in peril; and, when disaster has happened, faithful to all the interests entrusted to their charge.

"A copy of this selected list shall be furnished by the secretary to each member of this association. He shall also enter opposite each name selected in the registry, the word "approved," and address a letter to each person, informing him that this association have placed his name upon their preferred list of "Approved Masters," where it will remain so long as he continues to sustain the character now accorded him."

Respectfully submitted,

L. W. WEEKS, *Chairman.*

TO DISTRIBUTE OIL.

In the recently issued Pilot Chart of the lakes the following brief rules for the use of oil to protect vessels in stormy waters is published from the prize essay submitted to the Hamburg Nautical School by Capt. R. Karlowa of the Hamburg American Steamship Co.:

Scudding before a gale, distribute oil from the bow by means of oil-bags or through waste-pipes, it will thus spread aft and give protection both from quartering and following seas. If only distributed astern there will be no protection from the quartering sea.

Running before a gale, yawing badly and threatening to broach-to, oil should be distributed at the bow, the weather quarter is left unprotected when the ship yaws. However with oil-bags abaft the beam as well as forward, the quarter is protected.

Lying-to, a vessel can be brought closer to the wind by using one or two oil-bags foreward, to windward. With a high beam sea, use oil bags along the weather side at intervals of 40 or 50 feet. In a heavy cross-sea, as in the center of hurricane, or after the center has passed, oil-bags should be hung out at regular intervals along both sides.

Drifting in the through of a heavy sea, use oil from waste-pipes foreward and bags on weather side. These answer the purpose very much better than one bag at weather bow and one at lee quarter, although this has been tried with some success.

Steaming into a heavy head-sea, use oil through forward closet-pipes. Oil bags would be tossed back on deck. Lying-to, to take or wear, use oil from weather bow. Cracking on, with high winds abeam and heavy sea, use oil from waste-pipes, weather bow.

A vessel hove-to for a pilot, should distribute oil from the weather side and lee quarter. The pilot-boat runs up to windward and lowers a boat, which pulls down to leeward and around the vessel's stern. The pilot-boat runs down to leeward, gets out oil-bags to windward and on her lee quarter, and the boat, pulls back around her stern, protected by the oil. The vessels drift to leeward and leave an oil-slick to windward, between the two.

Towing another vessel in a heavy sea, oil is of the greatest service, and may prevent the hawser from breaking. Distributing oil from the towing vessel, foreward and on both sides. if only used aft, the tow alone gets the benefit.

At anchor in an open roadstead, use oil in bags from jib-boom, or haul them out ahead of the vessel by means of an endless rope rove through a tail-block secured to the anchor-chain.

A LIFE SAVING RECORD.

A Chicago tug master, Capt. Charles Roach, in the employ of the Dunham Towing Co., has, during his thirty-six years' experience, contributed more to saving lives than any one individual at that port.

According to a log book kept by the captain, he has been instrumental in rescuing two hundred persons. His first experience in life saving was on the 12th of December, 1867, when during a heavy storm the bark David Morse went ashore off Evanston. There were eleven persons on board and Capt. Roach succeeded in taking them all off. For this work he was presented with a gold watch valued at $575. It was bitterly cold at the time the wreck took place, and before those on board were rescued they were nearly frozen to death, and would doubtless have perished but for the prompt measures taken for their relief. Since that occasion there has not been a "blow" that has not found Capt. Roach and a good strong tug cruising about the harbor and in the open lake, ever on the lookout for signals of distress, and ready at a moment's notice to go to the assistance of anything in peril.

FUEL-SAVING DEVICE.

The Hamburg-American steamer Grimm is exciting considerable attention among steamship men at New York because of the change in her steam-producing arrangements, by which the gases and smoke ordinarily carried off through the stack are drawn back through the fires and reconsumed. It is a new smoke-consuming device patented by an inventor named Muller, of Hamburg, and was put into the Grimm in six weeks while she lay at that port. The Grimm is but four years old. She has heretofore been run between Bremen and Montreal. She carries steerage passengers and cargo only, and makes the voyage across the ocean in fourteen days, her average speed being about twelve miles an hour. Ordinarily she consumes about 350 tons of coal, but with the smoke-consuming attachment applied to her new furnaces she burned on this trip only 250 tons. The same force of stokers and firemen is carried, but their work is much lighter.

VISIBLE GRAIN SUPPLY.

The stocks of grain in Chicago elevators last Saturday evening were 19,353,000 bushels of wheat, 3,178,000 bushels of corn, 345,000 bushels of oats, and 129,000 bushels of rye. Total, 23,005,000 bushels of all kinds of grain, against 23,279,000 bushels a year ago. For the same date the Secretary of the Chicago Board of Trade states the visible supply of grain in the United States and Canada as 59,394,000 bushels of wheat, 7,495,000 bushels of corn, 2,606,000 bushels of oats, 250,000 bushels of rye, and 100,000 bushels of barley. These figures are smaller than the corresponding ones a week ago by 1,935,000 in wheat and 152,000 in corn. The visible supply of wheat for the corresponding week a year ago increased 208,000 bushels.

NEW BRIDGE AUTHORIZED.

According to a Washington special received Tuesday the Secretary of War has granted a license for the building of the Northwestern elevated bridge across the river near Wells street at Chicago. This bridge is to have no middle pier. It is not to be a lift bridge like that at Halsted street. It is to open in the middle, and the two parts are to be elevated and fold up against the respective piers.

NOTES.

THE project for the transfer of the Coast and Geodetic Survey from the Treasury Department to the Hydrographic Office of the Navy has an earnest supporter in Assistant Secretary McAdoo.

A COMPLAINT was recently received at the Bureau of Immigration that the Detroit & Cleveland Navigation Co. had violated the alien contract labor law by employing Canadians on their vessels. The matter is under investigation.

THE death of E. B. Bartlett, a prominent warehouseman of Brooklyn, N. Y., is announced in the papers of that city. Mr. Bartlett was a large stockholder in the American Steel Barge Co. and one of the whaleback steamers bears his name. His estate is said to be worth $2.000,000.

KITES so heavy that a gale of wind is required to raise them, and which, when raised, will draw a train of cars —kites forty-five feet in length—Japanese fighting kites —are described in *Harper's Young People* this week. The same number contains an article by W. J. Henderson on "Sailing a Sharpie."

THE U. S. Supreme Court has decided the steamship libel case brought by Arnold Constable & Co. of New York against the National Steamship Co. in favor of the latter. Goods belonging to the firm were burned on the dock after being landed. The court held, that the steamship company, which had secured permission to leave the goods on the dock forty-eight hours, held none of the liabilities of an insurance company. Justices Gray, Field and Shiras dissented.

THE President has approved the act to amend an act for the prevention of collisions at sea. It is the purpose of this act to carry out the recommendations of the International Maritime Conference, which met in Washington in 1889, as modified by the suggestions of some of the participating powers. Similar legislation has either been adopted or will be adopted by all of the maritime powers and the provisions of this act will constitute the international regulations governing the rules of the road at sea.

PATENTS.

Anchor. David Clark, Easton, Pa. Filed May 27, 1893. Claim.—In an anchor, the two three-fluked parts united by two rods or shafts and a shank pivoted on one of said rods and limited in its pivotal movement by the other rod combined with an anchor-chain guide which spans the said shank.

Propeller. Owen B. Genty, Vallejo, Cal. Filed January 5, 1894. Claim.—In a propeller, the combination with a shaft and the blades, of general semi-circular form, connected to and so arranged or disposed on the shaft that each blade will extend approximately at right angles to the other two and their forward and rear ends will rest in the same vertical planes; a fixed casing or hood, inclosing the blades and having its forward upper portion extended in advance of its lower portion.

Floating derrick. Thomas T. H. Harwood, Rockport, Mass. Filed March 16, 1893. Claim.—The combination with a floating vessel of pontoon-supporting beams rigidly secured to the deck of the vessel and extending laterally from one side thereof, a hollow, air-tight pontoon attached to said beams and supported thereby, anti-chafing blocks arranged between the side of the vessel and the pontoon, and means for supplying water to the interior of the pontoon.

AMPLITUDES.

The following approximate amplitudes of the Sun's rising will be given each week in this column during the season of navigation: A second bearing of the Sun may be taken at sunset by reversing the bearings to read west instead of east, as, for example, N. E. by E. for a sunrise bearing would read N. W. by W. for a sunset, or E. 30° N. to W. 30° N.

LAKE ERIE AND S. END LAKE MICHIGAN. LAT. 42° N.

Sunrise.	Bearing (degrees).	Bearing (points).
June 12	E. 32° N.	NE. by E. ⅛ E.
June 16	E. 32° N.	NE. by E. ⅛ E.

LAKE ONT., S. END HURON AND CENTER LAKE MICHIGAN LAT. 44° N.

Sunrise.	Bearing (degrees).	Bearing (points).
June 12	E. 33° N.	NE. by E. ⅛ E.
June 16	E. 33° N.	NE. by E. ⅛ E.

N. END LAKES HURON AND MICH. LAT. 46° N.

Sunrise.	Bearing (degrees).	Bearing (points).
June 12	E. 34° N.	NE. by E
June 16	E. 34° N.	NE. by E.

LAKE SUPERIOR. LAT. 48° N.

Sunrise.	Bearing (degrees)	Bearing (points).
June 12	E. 36° N.	NE. ⅞ E.
June 16	E. 36° N.	NE. ⅞ E.

With a compass correct magnetic, the difference between the observed and true bearing will be the variation for the locality. If there is any deviation on the course the vessel is heading at the time of taking the bearing the result after the variation is applied will be the amount of deviation on that course.

CIRCUMNAVIGATING THE GLOBE.

On the fourth of July a three-masted schooner will sail from the harbor of South Haven, Mich., bound on a three years' cruise around the world. At present the schooner is lying quietly at her dock in the Chicago river and the carpenters are building on her deck a cabin which during the long voyage will be the quarters of a score or more of adventurers. The vessel is the well known schooner G. B. Wrenn, and she will be carefully fitted out to carry Dr. W. C. Ransom, of South Haven, and a chosen company on an expedition of unusual interest.

The Trip Around the World Co. was organized a few weeks ago in Chicago under the laws of Illinois and is now preparing to send out this expedition to gather from foreign lands and seas, especially from out-of-the-way places in the world, botanical, geological, zoological, curio and other collections for a cosmopolitan museum. On the return of the vessel from her quest for the peculiar and the interesting, she will become for a time a floating museum on the Great Lakes, but her collections will finally be exhibited in a permanent museum at Chicago or some other large city. This proposed museum will be first established by the stockholders of the company who remain at home, with those specimens which are to be sent to them from the expedition from time to time before its return.

The company chosen to participate in this novel and delightful voyage is composed of both men and women, including artists, photographers, students, scientific specialists and newspaper correspondents, besides a crew of experienced seamen. Every person who will accompany the expedition must be a stockholder in the company and must perform the duties assigned by Dr. Ransom, the originator of the scheme, who will be chief director of navigation and will have full control of the expedition—the idea of which first occurred to him long ago when he spent fifteen years in traveling over the globe. He is a well known and wealthy physician at South Haven, and is highly enthusiastic over the promised realization of his fondest dreams.

The course of the expedition will be eastward through the Great Lakes and the River St. Lawrence to the Atlantic, and after leaving the American coast Norway and Sweden will be the first objective points. From St. Petersburg along the shores of the Baltic and the German, Danish and French coasts, the schooner will sail to the British Isles, and a visit to sunny Spain and Portugal will precede a cruise of the Mediterranean, varied by a pilgrimage into the Holy Land and a trip up the Nile. Passing through the Suez canal and the Red Sea, the expedition will coast eastern Africa, visit Madagascar, and, turning northward, the party will spend some time in India, Ceylon, Burmah and Siam, all the while gathering productions of native art and usage and other quaint things that may be found to illustrate the domestic and public life of the inhabitants of the strange countries visited. Then the expedition will become well acquainted with the East Indies, Australia, New Zealand, the Philippine Islands, China and Japan, the "Sunrise Kingdom," and gradually, from isle to isle of the myriad groups that dot the South Pacific, the schooner will come nearer home until by a long voyage from the Hawaiian group she will touch the American continent again at Alaska. Down the western coast of the Americas to the Straits of Magellan, northward again to the Amazon, up its mighty flood and back again, here and there through the West Indies, and along the coast of Central America and Mexico, the little craft will make her way slowly toward the north until, reaching the mouth of the St. Lawrence again, she will retrace between its beautiful banks and through the lakes the course by which she first left home.

It is proposed to largely pay the expenses of the trip by occasional trading from port to port, which it is believed can be easily made remunerative. Every precaution will be taken to make the voyage as safe as possible, and it is needless to add that, by those who expect to go, a delightful cruise is anticipated.

THE GRAVEYARD OF AMERICAN SHIPPING.

BY GEORGE ETHELBERT WALSH.

From Home and Country, New York, for June.

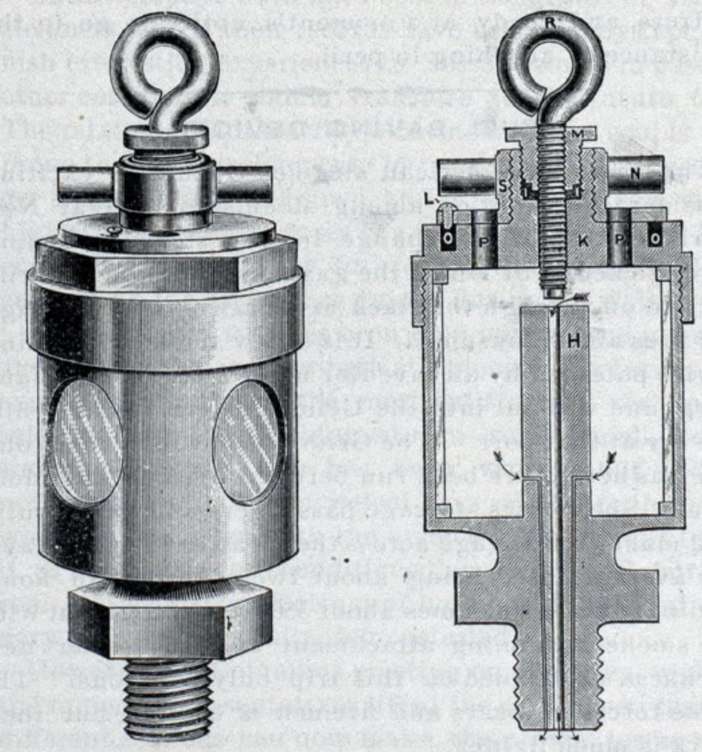
Every ocean steamer carries a large crew, varying from a score or more to several hundred, and in the event of a disaster at sea the loss of life would be large even though no passengers were on board. The wreck of the White Star freighter Naronic, with all her crew, carried mourning into scores of humble homes, while the Alvo of more recent date, was no more merciful in its final plunge beneath the waves.

Enormous sums have to be paid as salvage money to the rescuers of ocean steamers when they are disabled at sea, and probably this is a more fruitful source of expense to the large companies than any other. On her first voyage, the City of New York, as she was then called, ran ashore off Sandy Hook, and it cost the company $100,000 to float her off. In 1890 her sister ship, the City of Paris, broke her engines off the Irish coast and was towed into port at an expense of $30,000 as salvage money. The City of Boston broke her shaft in 1882, and it cost the company $46,500 to get her into port, and the Venezuela, of the Red D Line, struck on the Brigantine shoals off New Jersey, in 1889, so that the company had to spend $40,000 to get her off. The City of Richmond was towed into Halifax Harbor in 1882, at an expense of $35,000. The list could be largely extended, showing that the amount of salvage money paid for rendering services to disabled steamers at sea is so enormous that it almost equals the loss entailed by injuries to our wooden vessels. The loss of life is less. It is quite rare that an ocean steamer is submerged beneath the waves so that the crew and the passengers are lost, but when such an accident does transpire the destruction is appalling. It excites the interest and sympathy of two continents, and warns the world again of the danger that comes to those who sail upon the high sea.

IMPROVED CRANK PIN OILER.

(ILLUSTRATED.)

There has always been a demand among engineers and engine builders for a crank pin oil cup which will give a steady flow of oil in just the right quantity to keep the crank pin from heating, while not allowing sufficient oil to pass to it as to cause a waste. Many schemes have been devised for effecting this result, but up to the time the Penberthy Injector Co. placed their safety crank pin oiler on the market, about two years ago, there has been nothing devised that was entirely satisfactory. Cups have been made which would insure a steady flow of oil, but many of them were so constructed that when in use the oil would be thrown out of the top of the cup, and others were very easily clogged by dirt. The safety cup met with a rapid sale, owing to its simplicity of construction and its very satisfactory operation. The Penberthy Injector Co., however, are noted for never being satisfied until the articles which they manufacture are as perfect as skill and ingenuity can make them. Recognizing the fact that their cup as originally made had one or two weak points about it, they set to work to remedy these defects, and have recently produced their improved double feed crank pin oiler, which we illustrate herewith. The improvements have lessened the number of parts of which the cover



is composed, and have also simplified the construction of the cup, while at the same time allowing of a much finer regulation than any other cup made. A careful reading of the following description will show the points wherein the cup is superior to others:

H is the plunger, which rises and falls with the motion of the engine, forcing part of the desired amount of oil to the crank pin, while at the same time the oil is flashed on top of the plunger and passes down through its hollow center, thus giving two distinct and separate feeds, so that in using this cup there are two chances against its feed becoming clogged. K is the cover of the cup, containing two passageways, P P. One of these is to allow the air to enter the cup and the other is the vent hole by which the air in the cup passes out. On top of the cover is an escutcheon S, operated by means of a handle N passing through it. When the cup is in operation this handle is turned hard to the right, bringing the holes in the escutcheon out of line with the holes in the cover of the cup, and the escutcheon being threaded and turning on a corresponding thread on the cup cover, allows of an absolutely tight seat being made between the escutcheon and the cover, so that it is impossible for the oil to spill out while the cup is working. To fill the cup the handle N is turned to the left until the holes in the escutcheon and the cover are in line, when the oil can be quickly poured in from a spring bottom can, and as the air is allowed free vent through the vent hole there is no spilling of oil possible with ordinary care. In this manner the cup is filled without changing the regulation in the least. The screw L passing through the escutcheon allows it to turn to the left just a sufficient distance to bring the holes in line. The feed is regulated by the regulating screw R, which admits of a regulation as fine as 1-1000 of an inch or less. This regulating screw passes through the stuffing nut M and through the packing I in the same manner that the stem of a globe valve passes through its stuffing nut, and the tension on the regulating screw is altered by turning this stuffing nut M same as the packing is tightened or loosened on a globe valve.

As will be seen, the cup is simplicity itself, and it is impossible to get it out of order. The plunger H, having a square shoulder against the bottom of the cup, the oil stops feeding as soon as the engine stops running, and there is therefore no waste. Owing to its fine regulation, it can be set to feed just the desired amount of oil, and with the proper size cup it can be so regulated as to run for a half or a full day, as desired, so that the engine need never be stopped to refill the cup, and the only attention required from the engineer is to fill it at the proper times, as it does its work automatically. This cup has been adopted by several of the largest manufacturers of threshing engines in the United States and also by several large engine builders, and wherever introduced is meeting with a rapid sale.

The manufacturers, The Penberthy Injector Co., of Detroit, Mich., will be pleased to send descriptive circulars and quote prices on application.

TRADE NOTES.

Graphite as a Lubricant, is the title of an interesting and instructive 20-page pamphlet issued by the Joseph Dixon Crucible Co., Jersey City, N. J. Every user of lubricants can obtain a copy of this brochure free of charge by writing to the company for it.

The Detroit Sheet Metal & Brass Works are now handling the Pierce patent combination valve, according to a pamplet issued by the firm. This valve is all the name implies, viz.: a combination of all the best known principles of valves, and is, in fact, a straight-way globe valve. Engineers and users of valves for any purpose will appreciate a valve that is perfectly tight at all times. Testimonials from users accompany the descriptive catalogue of the specialty.

The Armstrong life preserver, made of block or granulated cork, as the purchaser desires, has an established reputation with the ship builders and outfitters of America. The latest type of ships, yachts and river steamers, it is said, carry this make of life preserver, and are also fitted out with the same firm's ring buoys. These goods are constructed of the best material, and every preserver is tested and stamped by the United States inspector before leaving their factory, and they are guaranteed to meet the requirements of the U. S. government in all particulars. Prices and information on application to Armstrong Bros. & Co., (Inc.) Pittsburg, Pa.; the Armstrong Bros. Co., New York City; Fay-Armstrong Cork Co., Chicago; Armstrong-Gilbert Cork Co., St. Louis.

The illustrated catalogue for 1894, issued by J. S. Mundy, Newark, N. J., is an excellent compendium of hoisting mechanism in its various details. Judging from the plates of the works contained in the catalogue Newark has a pretentious and successful manufactory in the J. S. Mundy Engine Works. The firm, which has attained a prominent place among the larger industries of the country, was established in 1870 and steadily advanced until it has now an enviable patronage and a reputation for turning out nothing but first-class work. As usual, the point of excellence has been arrived at through the skill and indefatigable attention of the founder of the industry. Mr. Mundy gives his personal attention to all parts of the construction entering into the manufacture of high-class hoisting engines, bridge erections, pile drivers, dreding mechanism and steam boilers, so that the Newark machines have become justly celebrated for their efficiency. In hoisting engines and patented friction drums a great advance has been made, all of which is neatly and clearly shown in the new illustrated catalogue. Those contemplating a purchase of hoisting or dredging machinery should be in possession of this trade literature.

THE Detroit *Free Press* is now pleasantly located in its new and permanent home, surrounded with all the perfect appliances of the printer's art. Simultaneously with getting into its new quarters the paper enters upon the 64th year of its existence. As an evidence of the excellence of its new resources, the *Free Press* managers have issued an anniversary edition of thirty-six pages. It is a splendid edition and shows that the *Free Press* is, beyond a geographical point of view, in the heart of a great city.

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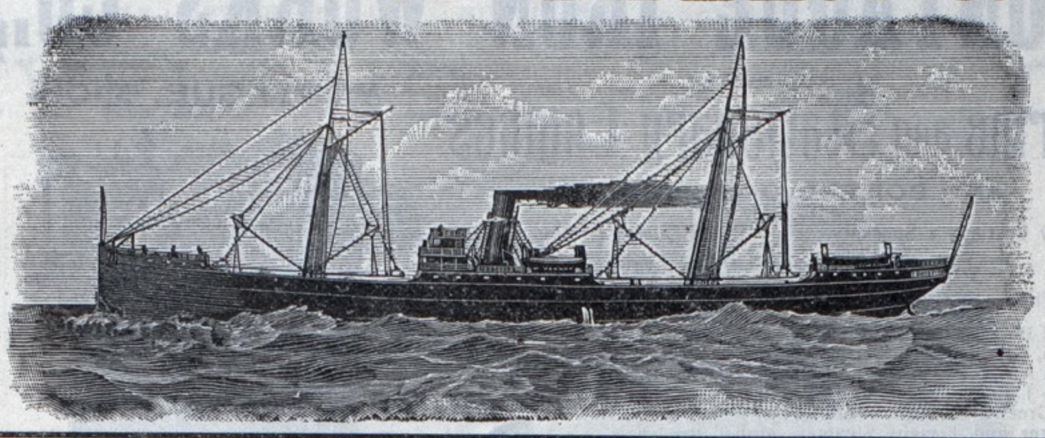

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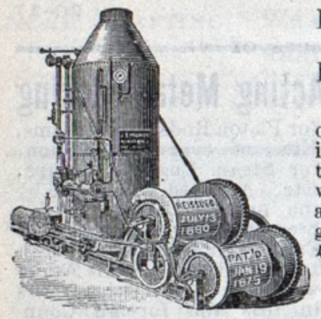

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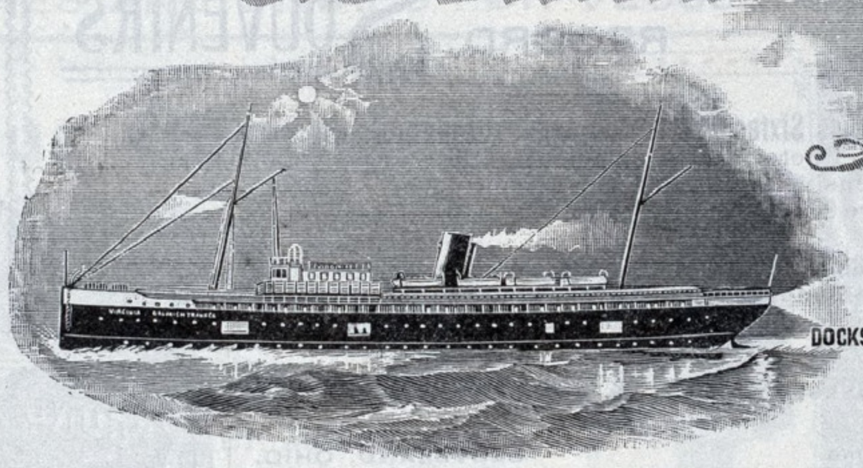

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PROPOSALS.

Treasury Department, U. S. Life-Saving Service, Washington, D. C., May 31, 1894. Sealed proposals will be received at this office until two o'clock p. m., of Wednesday, June 13, 1894, for the construction of ten life-boats(English model), four to be delivered in New York City, and six in Grand Haven, Mich. Bids will be received for one or more of the boats, but bidders must state the time when they will agree to deliver the boats. Forms of proposal, together with plans and specifications can be obtained upon application to this office, to the Inspector Life-Saving Stations, 24 State St., New York City, or to the Assistant Inspector, 11th Life-Saving District, Custom House, Chicago, Ill. S. I. KIMBALL, General Superintendent. 23

OFFICE OF THE LIGHT-HOUSE ENGINEER, SEVENTH DISTRICT, New Orleans, La., June 2, 1894. Sealed proposals will be received at this office until 2 o'clock p m. of Tuesday the 3d day of July, 1894, for furnishing materials and labor of all kinds necessary for the completion and delivery of the metal work required for increasing the height of the tower at Key West, Florida. Plans, specifications, forms of proposal, and other information may be obtained on application to this office. The right is reserved to reject any or all bids, and to waive any defects. JAMES B. QUINN, Major of Engineers, U. S. Army, Light-House Engineer, Seventh District. 23-26

PROPOSALS.

FIREBOAT—TO CONTRACTORS—Sealed proposals, accompanied with plans and specifications, for furnishing the city of Cleveland, O., with a wood, steel or iron fire-boat, without the motive power or pumps, will be filed with the clerk of the Board of Control, room No. 105, City Hall, until 12 o'clock, noon, Thur day, June 14, 1894. No bids will be received or considered after the hour named.

The boat to be of the following dimensions:

88 feet long over all.
22 feet beam.
11 feet hold.

Plans and specifications will be on file in the office of the Director of Fire service, room No. 115 City Hall, after June 1, 1894.

The whole work and material, also the design and arrangement of all fittings and appliances used in the construction of the boat are to be subject to the approval and direction of the Director of Fire service and the supervisor whom the Director may appoint. The successful bidder will be called to enter into a contract for furnishing the boat complete in all respects, ready for service, except the motive power, pumps, equipments, such as hose, play pipes, Siamese connections, pipe holders, etc., etc. Each bid shall contain the full name of every person interested in the same, addressed to James Hosack, clerk of the Board of Control, and shall be accompanied by a bond or certified check on a solvent bank of this city for an amount equal to 10 per cent. of the amount, that if the bid is accepted the contract will be entered into and the performance of the same properly secured.

The Council may at its discretion reject all the bids or accept any bid which may be the lowest and best bid, when recommended by the Board of Control.

H. H. HYMAN,
Director of Fire Service. 23

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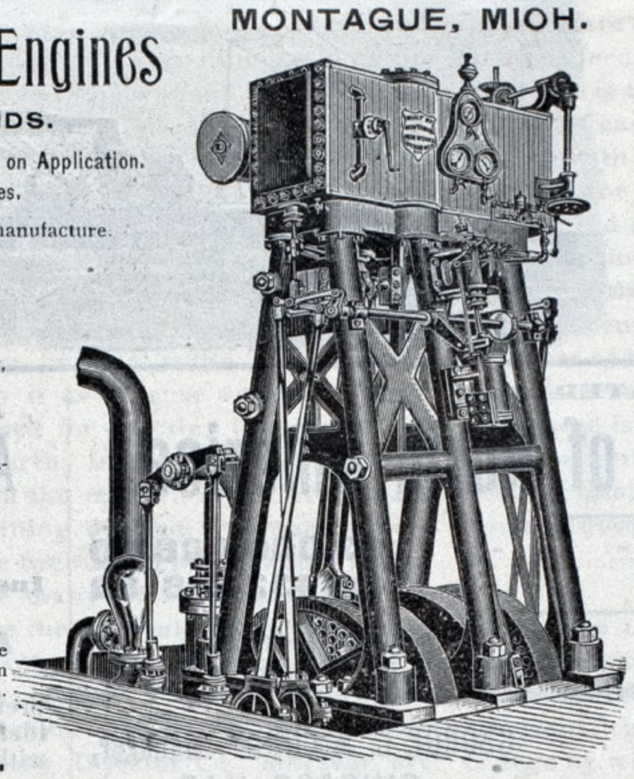

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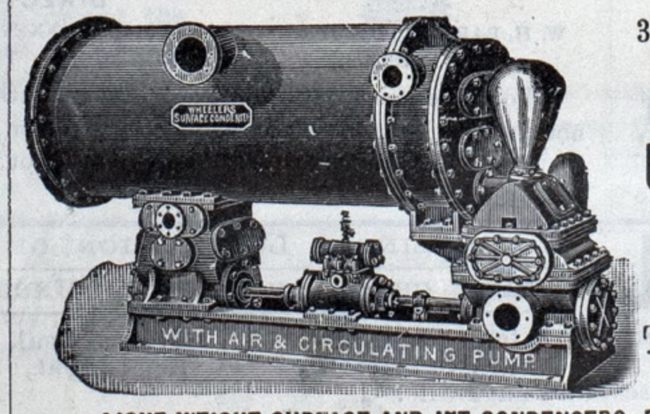

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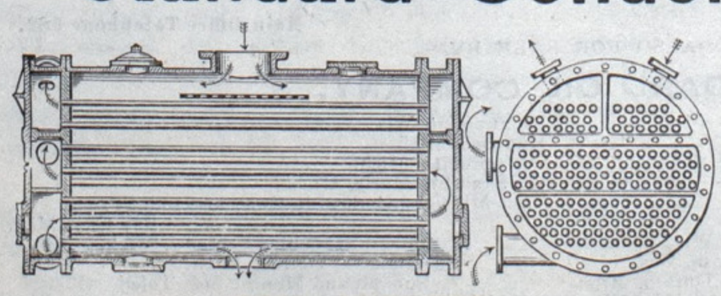

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Y. P. S. C. E. SOUVENIR.

An edition of the Souvenir Maps of the Y. P. S. C. E. Convention to be held July 11th to 15th, at Cleveland, O., has been issued to the Nickel Plate Road, the shortest through passenger line between Buffalo and Chicago. Any person who expects to attend this Convention and desiring one of these maps can have same forwarded to his address, free, with the compliments of this popular low rate line.

Requisition should be made on the Advertising Department of the Nickel Plate Road, Cleveland, O. B. F. Horner, General Passenger Agent. 20–27

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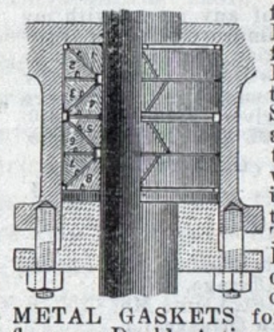

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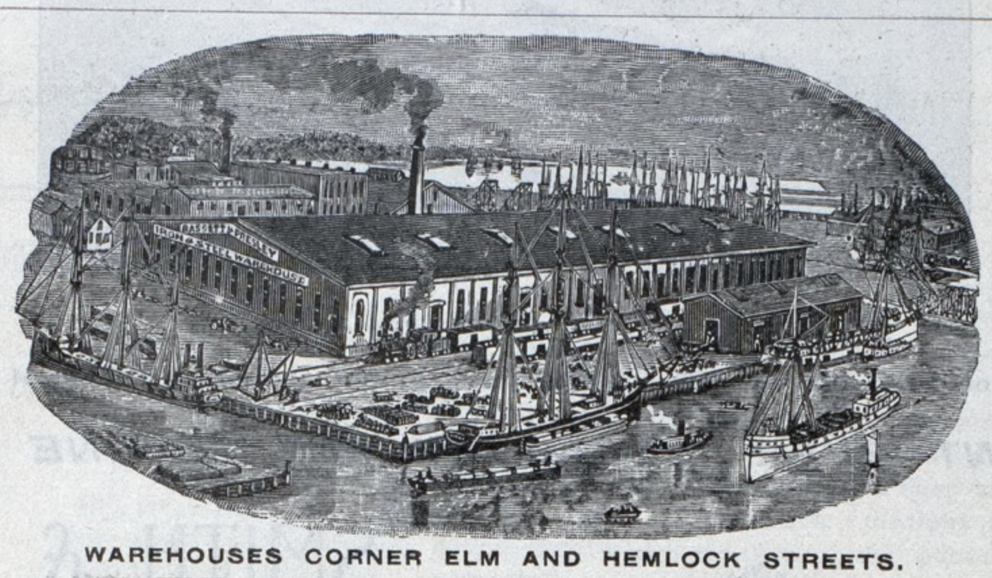

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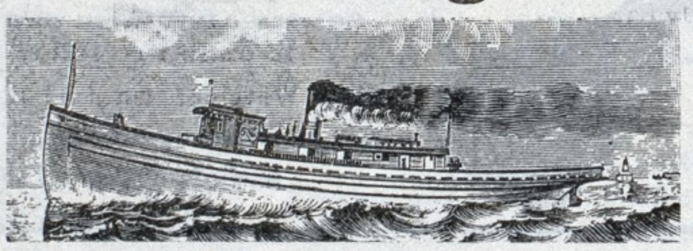

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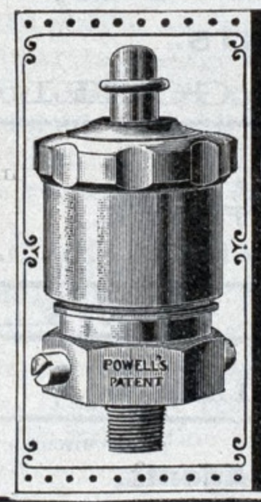

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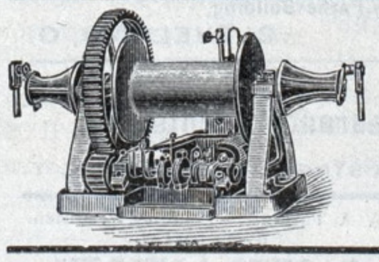

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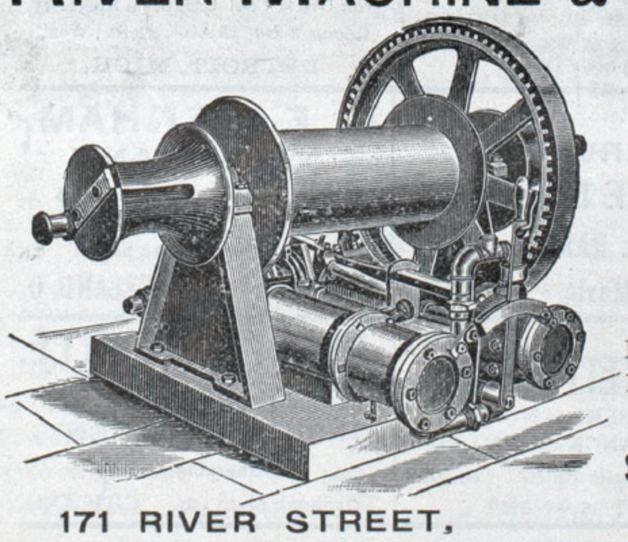

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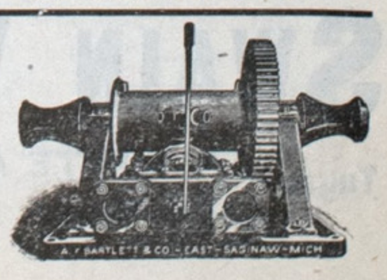

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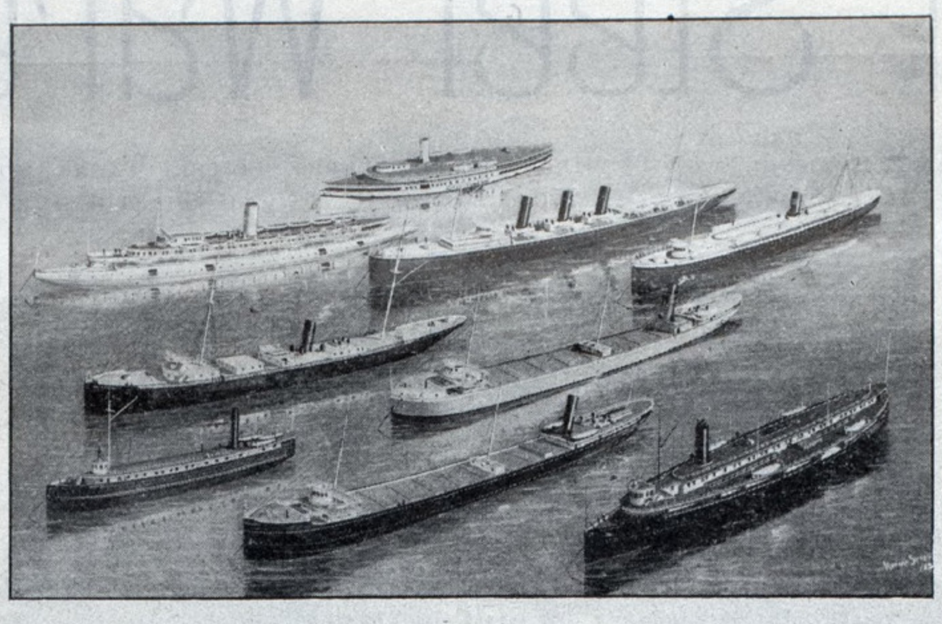

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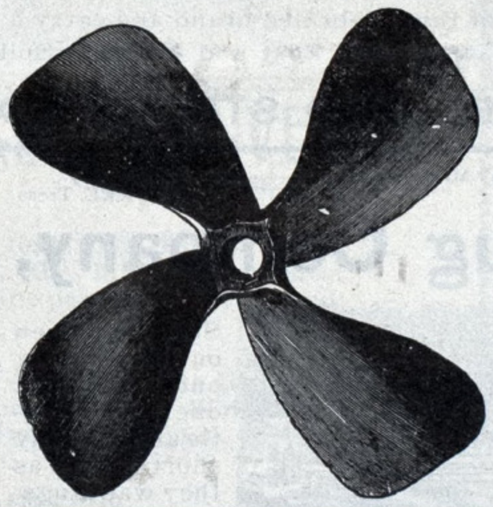

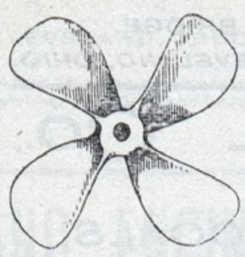

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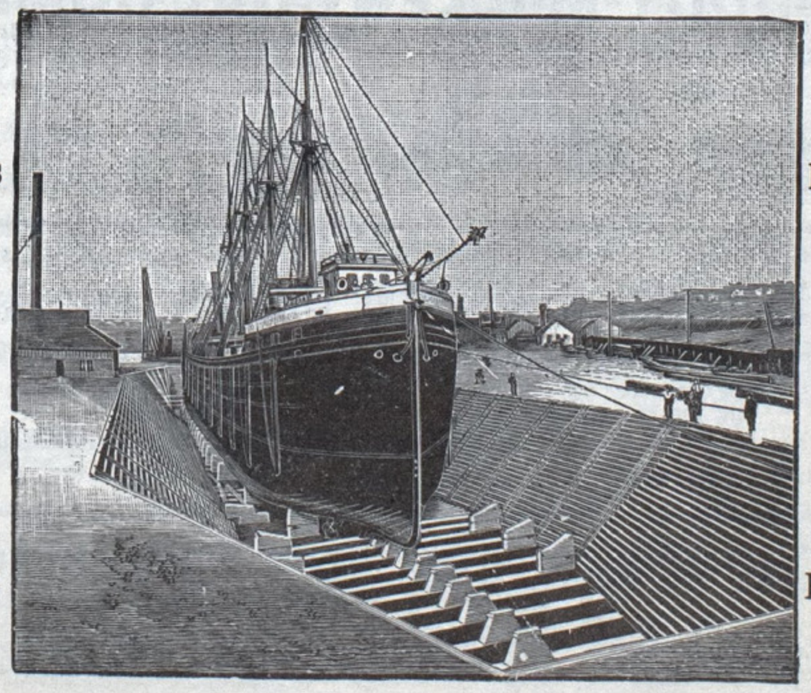

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